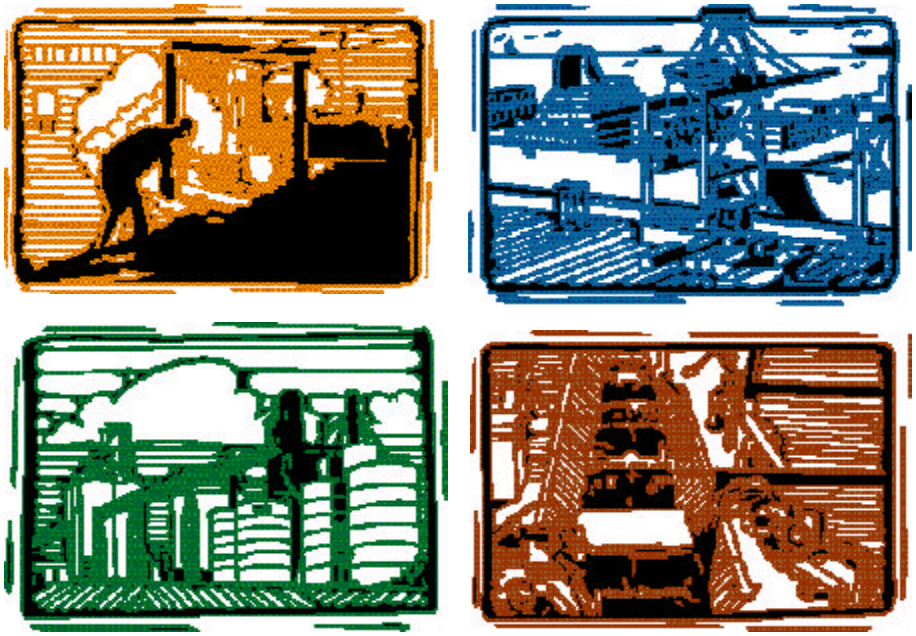
U.S. Jobs From Exports

A 1997 Benchmark Study of Employment Generated by Exports of Manufactured Goods



Office of Trade & Economic Analysis
International Trade Administration
U.S. Department of Commerce
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KEY FINDINGS

- **Results of a joint ITA-Census Bureau statistical research project show that exports of manufactured goods supported an estimated 7.7 million U.S. jobs in 1997.** Only 3.3 million of these jobs were in the manufacturing sector itself – the rest were in non-manufacturing support industries (e.g., raw materials, transport, business services).

- **Nearly three-fourths of all jobs supported by manufactured exports are generated indirectly, occurring upstream or downstream from the final production point as export activity triggers ripple effects in supporting sectors throughout the economy.** In 1997, 1.3 million manufacturing jobs and 4.3 million non-manufacturing jobs depended indirectly on exports of manufactures. A little over 2 million manufacturing workers were *directly* dependent on manufactured exports and were employed by plants producing final goods for export.

- **Overall, one out of every five manufacturing jobs was directly or indirectly tied to exports in 1997.** More than one third of jobs in two industry sectors – Computers & Electronic Products and Primary Metals – was supported by exports. And in each of nine major U.S. manufacturing sectors more than 100,000 jobs were dependent on the production of manufactured exports or inputs incorporated into those shipments.

- **The job-supporting benefits of manufactured exports are broadly distributed throughout the nation.** In 1997, fifteen states depended on manufactured exports for over 20 percent of all manufacturing jobs. And more than three-fourths of all states relied on manufactured exports for at least 5 percent of all private-sector jobs. Exports supported more than 100,000 jobs in manufacturing and non-manufacturing sectors in more than half the states. In 39 states and the District of Columbia, exports of manufactures supported more jobs in non-manufacturing industries than in the manufacturing sector.

INTRODUCTION

This report provides state-by-state and national-level estimates of jobs supported by exports of manufactured goods from the United States. The estimates are the product of a joint statistical research project by the International Trade Administration and the Bureau of the Census. The project was launched in mid-1999 in response to a growing need – by the public, Congress, and federal and state agencies – for timely and defensible data on the employment effects of U.S. international trade.

To address the issue, the International Trade Administration (ITA) arranged with the Manufacturing and Construction Division of the Census Bureau to develop and implement a methodology for estimating the number of U.S. jobs tied to exports of manufactured products. At the outset, the decision was made to limit the initial phase of the project to manufactured exports only. This was done to reduce the project's enormous technical complexity, maximize reliability, and generate results within a reasonable time frame. The decision was also made to initially generate "benchmark" estimates, drawing on 1997 Economic Census results for the manufacturing sector, followed by inter-Census updates based on data collected in the Census Bureau's Annual Survey of Manufactures.

Under the ITA-Census arrangement, Census was fully responsible for developing the employment estimates. ITA financed the project, assisted in quality control, and was responsible for data formatting, publication design, and analysis. Consequently, while Census is responsible for the accuracy of estimates cited in this report, ITA is wholly responsible for the presentation and all conclusions and interpretations drawn from the statistics.

Major findings of the 1997 benchmark effort are outlined on the following pages. For each state and the nation as a whole, estimates are provided for the total number of jobs supported by exports of manufactured products. Included are jobs *directly* supported by exports in manufacturing establishments producing final goods for export, as well as jobs *indirectly* supported – i.e., among manufacturing facilities supplying inputs to export-related production and among non-manufacturing establishments that also support the export process (e.g., transportation, wholesaling, retailing, and business services). Also provided for each state are estimates of the shares of manufacturing employment and total private-sector employment dependent on exports of manufactured goods. Lastly, this report furnishes national-level figures on the number and percentage of export-supported jobs in individual major manufacturing industries (3-digit NAICS – North American Industry Classification System – level of detail).

A 1999 update is now underway and scheduled for completion in mid-2001. In the meantime, additional 1997 data providing more details on the employment impact of manufactured exports at the state level will be made available in months ahead. This information will initially be posted on ITA's web site at http://www.ita.doc.gov .

As indicated above, all export-related employment figures in this report are estimates derived by the Census Bureau using the best available information and practices. On the Census side of the project, planning and implementation were under the direction of Judy Dodds, assisted by Stacey Cole, Thomas Flood, John Gates, and Cathy Ritenour. General direction was provided by William Bostic, Chief of Census' Manufacturing and Construction Division.

The methodology relies heavily on results of the 1997 U.S. Economic Census, export statistics generated by the Census Bureau's Foreign Trade Division, and input-output coefficients produced by the Commerce Department's Bureau of Economic Analysis. A detailed explanation of procedures used to produce the employment estimates is provided in the Appendix. Any technical questions about the methodology should be directed to John.H.Gates@census.gov .

This study is intended as just the first step in a continuing effort to measure the employment effects of U.S. exports. The figures cited here understate the total number of export-supported jobs because they exclude employment generated by exports of minerals and farm products, as well as jobs tied to the direct export of services (service sector jobs are counted in this report only if they support exports of manufactures). Future work will be directed at addressing these shortcomings.

Georg Mehl of ITA is the principal author of this report and was lead economist on the ITA side of the project. William Kolarik was project manager and editor. Kemble Stokes served as technical advisor. Francine Krasowska and Rebecca Krafft were responsible for cover design and graphics. Jonathan Menes and Jeffrey Lins provided general supervision. Any questions about conclusions or interpretations of the data should be directed to Georg_Mehl@ita.doc.gov .

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U.S. JOBS SUPPORTED BY EXPORTS OF MANUFACTURES

National Overview

- **There were an estimated 7.68 million U.S. jobs dependent on exports of manufactured goods in 1997, the latest year for which these numbers are available.** These jobs represented 7.2 percent of total U.S. private-sector employment, or about one out of every 14 jobs. Additional details on the industry and geographic distribution of these jobs are provided below.

- **An estimated 3.34 million jobs in U.S. manufacturing were supported by exports of manufactures.** This represented 19.8 percent of total manufacturing employment–or about one in every five workers.

  < Jobs *directly* supported in manufacturing totaled 2.03 million – equal to 26 percent of all jobs supported by manufactured exports.

  < Jobs *indirectly* sustained in manufacturing totaled another 1.3 million jobs (17 percent of total jobs generated by manufactured exports). These jobs were in manufacturing establishments supplying components or machinery that supported exports of manufactures.

  < Many manufacturing jobs indirectly supported by manufactured exports were far removed from the production of final export goods. A good hypothetical example is workers that made components used in machinery that produced the steel contained in tractors exported from the United States.

- **Manufactured exports also indirectly sustained 4.33 million jobs in a wide range of non-manufacturing industries that provided support for export-related activities.** These jobs comprised 56.4 percent – more than half – of all jobs supported by exports of manufactures.

- **Examples of non-manufacturing industries which benefitted from manufactured exports include Wholesale-Retail Trade (1.38 million jobs tied to manufactured exports), Transportation Services (653,000 jobs), and Business Services (571,000 jobs).** Other sectors – such as Agriculture, Utilities, and Mining – had a combined total of 1.72 million jobs dependent on exports of manufactures.

- **The preceding figures document the fact that manufacturing jobs directly sustained by manufactured exports are only a relatively small part of the export-related jobs picture.** Like an iceberg whose bulk is mostly below water, most jobs sustained by manufactured exports are shrouded from view.

- **Taking jobs indirectly supported in manufacturing *and* non-manufacturing, nearly 74 percent – almost three-fourths – of all jobs sustained by manufactured exports in 1997 were generated indirectly, often due to subtle ripple effects throughout the economy.**

Manufacturing Sector Details

- **In nine out of 21 major U.S. manufacturing sectors, more than 100,000 jobs were directly or indirectly tied to exports of manufactured goods in 1997.**

  < Over one million export-supported jobs were found in just two sectors – the Computers & Electronics industry (603,000 jobs linked to manufactured exports) and Transportation Equipment (470,000 jobs).

  < Other manufacturing sectors with large numbers of export-dependent workers included the Machinery industry (397,000 jobs tied to manufactured exports), Fabricated Metal Products (392,000 jobs), Chemical Products (221,000 jobs), and the Primary Metals industry (214,000 export-related jobs).

- **Fourteen manufacturing sectors – or two-thirds of all manufacturing industries – each depended on manufactured exports for at least ten percent of all jobs.**

  < Two industries – Computers & Electronic Products, and Primary Metals – each relied on manufactured exports for some 35 percent of total employment, or more than one out of every three jobs.

  < In four other major industries – Machinery, Transportation Equipment, Chemicals, and Electrical Equipment, Appliances & Parts – at least one-fourth of all jobs were sustained by exports of manufactures.

State Overview

- **Jobs sustained by the export of manufactured goods are distributed broadly throughout the country**.

- **In each of 27 states, more than 100,000 jobs were dependent on exports of manufactures in 1997.** Of these states, ten relied on manufactured exports for more than 200,000 jobs.

  < California led all states, with 1.15 million jobs (15 percent of the U.S. total) directly or indirectly tied to manufactured exports. Texas ranked second with 612,000 export-related jobs.

  < Other states with large numbers of jobs linked to manufactured exports included Ohio (452,000 jobs), Michigan (373,000 jobs), Illinois (360,000 jobs), New York (310,000 jobs), Pennsylvania (270,000 jobs), North Carolina (286,000 jobs), Washington (255,000 jobs), and Indiana (241,000 jobs).

- **In 38 states, manufactured exports were responsible for over five percent of total private-sector employment.**

- Of these states, 16 relied on exports of manufactures for over eight percent of all private-sector jobs.

- New Mexico was the most export-dependent state (17.3 percent of private-sector jobs), followed by Idaho (16.5 percent), Washington (11.7 percent), and New Hampshire (10.5 percent).

- **Within state manufacturing sectors, 11 states each depended on exports of manufactured goods for over 100,000 manufacturing jobs.**

  - California again led all states with 499,000 – almost one-half million – manufacturing jobs tied to manufactured exports. Ohio was second with 224,000 export-related jobs in manufacturing.

  - Other leading states were Texas (196,000 export-supported manufacturing jobs), Michigan (191,000), Illinois (165,000), New York (155,000), Pennsylvania (137,000), North Carolina (133,000), Washington (129,000), Indiana (124,000), and Massachusetts (104,000).

- **In each of 47 states, at least ten percent of total manufacturing employment – one out of every ten jobs – was directly or indirectly dependent on the production of manufactures for export.** In 15 of these states, over 20 percent – more than one in five – of all manufacturing jobs were sustained by manufactured exports.

  - Roughly 40 percent of Washington state's manufacturing work force – two of every five jobs – was tied to the export of manufactured products. New Mexico ranked second, with 30.0 percent of all manufacturing jobs dependent on exports.

  - Other states with substantially export-dependent manufacturing sectors included California (27.6 percent of all manufacturing jobs tied to exports), Idaho (26.4 percent), New Hampshire (25.7 percent), Connecticut (25.0 percent), Massachusetts (24.8 percent), Michigan (22.9 percent), Ohio (22.7 percent), Oregon (21.6 percent), Arizona (21.1 percent), Colorado (20.9 percent), Texas (20.4 percent), Missouri (20.4 percent), and Kentucky (20.2 percent).

- **In 39 states and the District of Columbia, exports of manufactured goods in 1997 supported more jobs in non-manufacturing industries than in the manufacturing sector itself.** This is consistent with the previously cited fact that, nationally, 56.4 percent of all jobs supported by manufactured exports were in non-manufacturing industries, such as Transportation Services and Business Services.

  - Manufacturing industries in New Mexico, Hawaii, and Wyoming accounted for 20 percent or less of all jobs supported in those states by the export of manufactured goods. In the District of Columbia, not one of the 1,100 jobs tied to manufactured exports was actually located in the manufacturing sector.

- < In another 20 states – including the large industrial exporting states of New Jersey, Georgia, Florida and Texas – manufacturing industries accounted for less than 40 percent of jobs generated by U.S. exports of manufactures.

- **A total of 11 states each depended on manufactured exports for over 100,000 non-manufacturing jobs in 1997.**

- **Manufactured exports generated over one million non-manufacturing jobs in California (649 thousand) and Texas (415 thousand).** Other states with large numbers of non-manufacturing jobs dependent on manufactured exports included Ohio (228,000 jobs in non-manufacturing sectors), Illinois (196,000), Michigan (182,000), New York (154,000), and North Carolina (153,000).

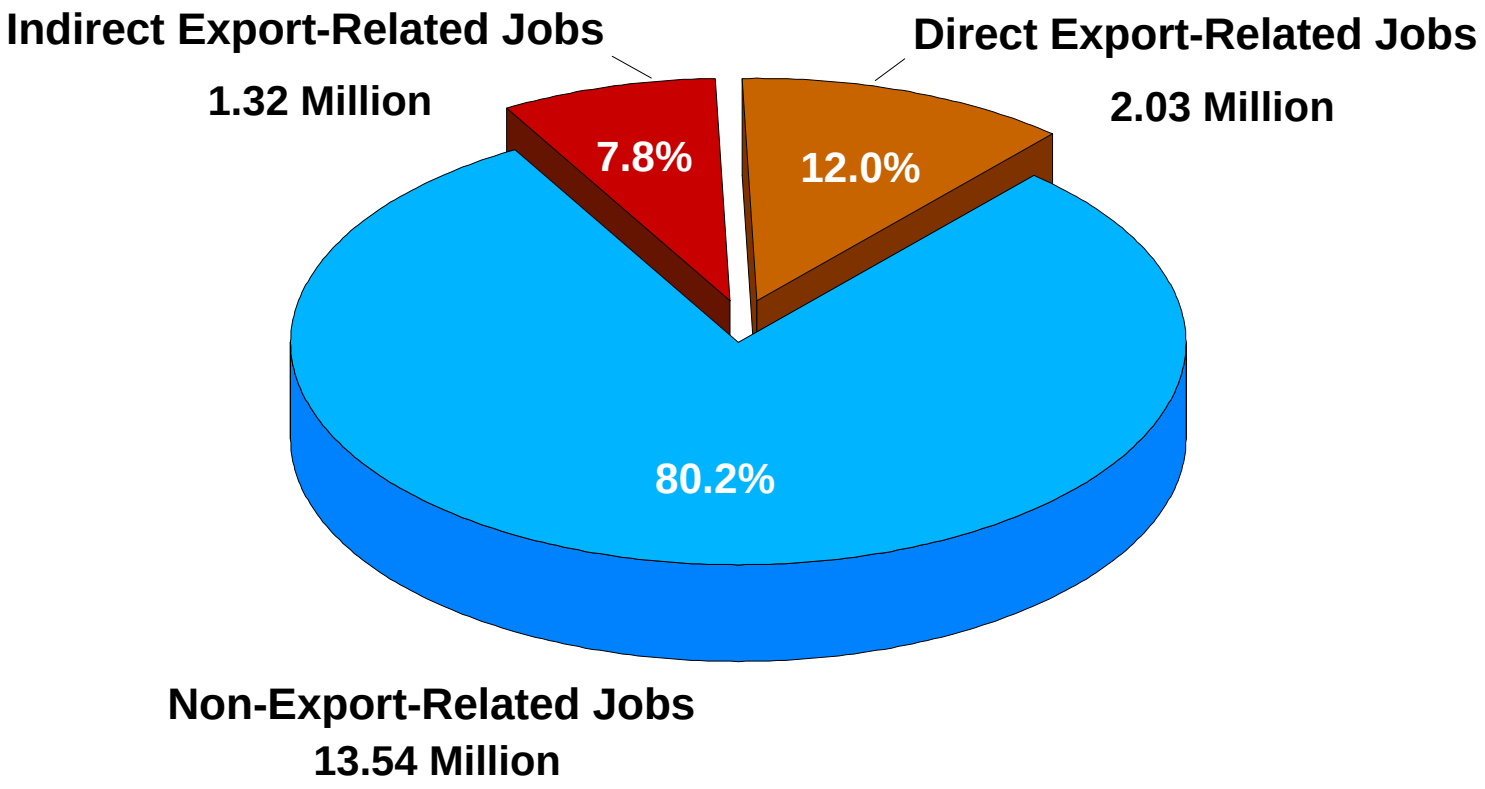
Note: The export-related job numbers provided in this report refer to jobs directly and indirectly sustained by manufactured exports only. Excluded is the unknown number of jobs in manufacturing and non-manufacturing that are supported by exports of non-manufactured products–including agricultural products, mining commodities, and a host of services. A hypothetical example is the manufacturing workers required to assemble mining equipment and farm vehicles necessary for the production of agricultural goods or minerals that are eventually exported. Similarly excluded are workers in various service sectors that transport, finance, and insure exports of farm or mineral products. A final example is workers engaged in the manufacture of office equipment used by banks to provide international financial services.

SUMMARY GRAPHS

AND CHARTS

ONE OUT OF EVERY FIVE MANUFACTURING JOBS IS TIED TO EXPORTS

Employment Distribution in U.S. Manufacturing, 1997



U.S. Manufacturing Employment Totaled 16.9 Million in 1997

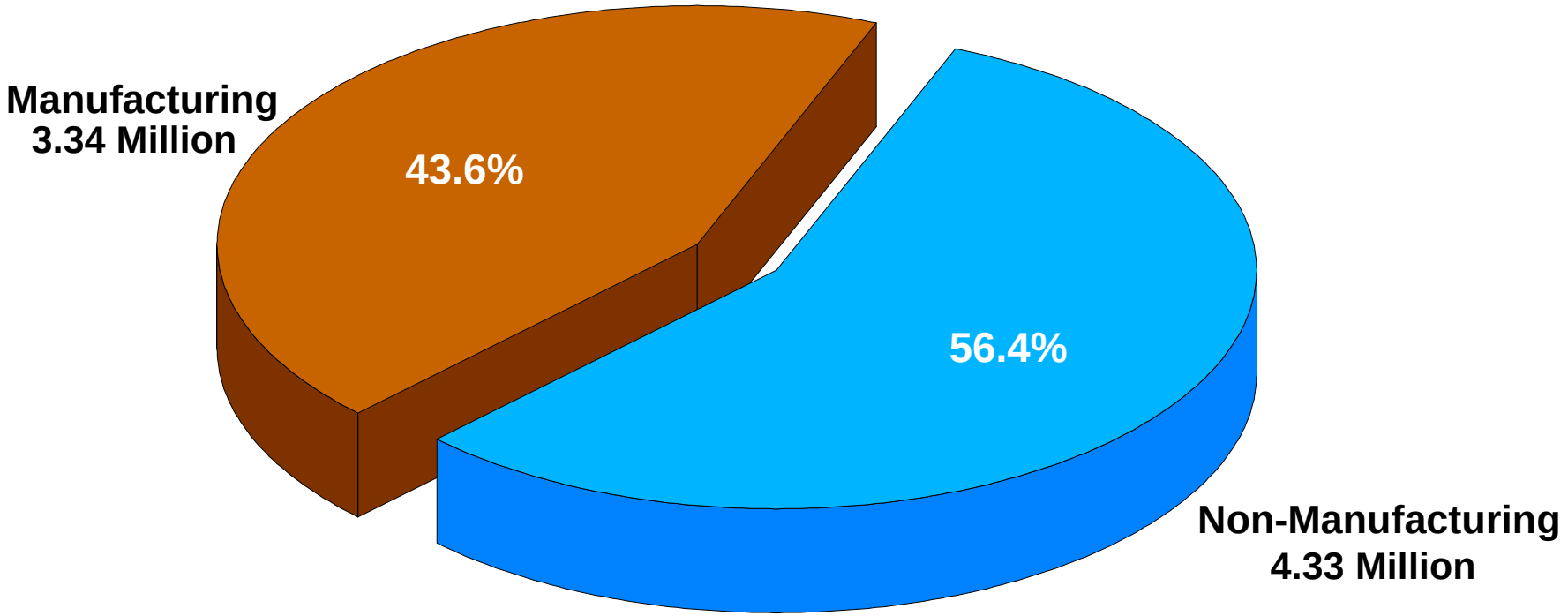
***Note:** Direct export-related jobs refer to employment generated in manufacturing establishments producing final goods for export. Indirect jobs are those jobs generated upstream or downstream from the final production point as export activity triggers ripple effects in supporting sectors throughout the economy.*

***Source:** Manufacturing & Construction Division, Bureau of the Census.*

***Prepared by:** Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.*

MANUFACTURED EXPORTS HAVE THEIR BIGGEST EMPLOYMENT IMPACT IN NON-MANUFACTURING SECTORS

Industry Distribution of Jobs Supported by Manufactured Exports, 1997

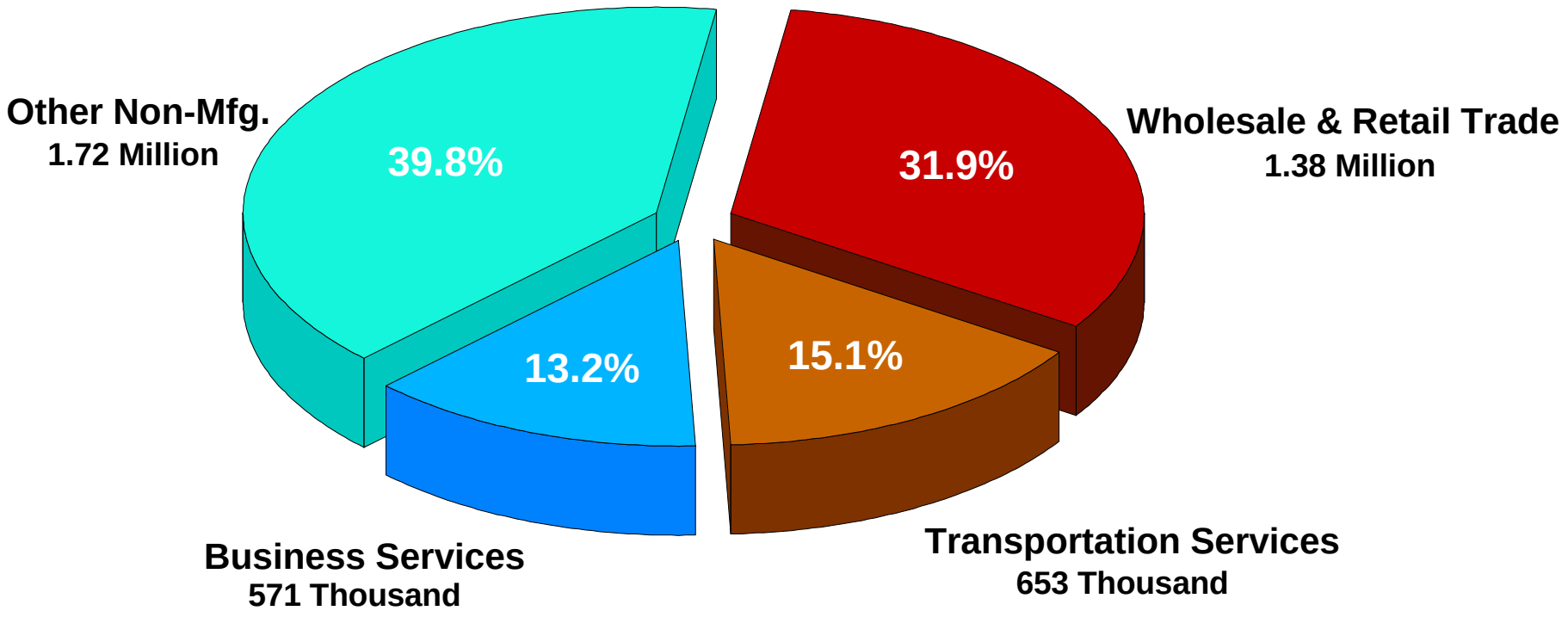


7.7 Million U.S. Jobs Were Tied to Manufactured Exports in 1997

Source: Manufacturing & Construction Division, Bureau of the Census.
Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.

MANUFACTURED EXPORTS GENERATE SIGNIFICANT EMPLOYMENT IN NON-MANUFACTURING SECTORS

Industry Composition of Non-Manufacturing Jobs Tied to Manufactured Exports, 1997

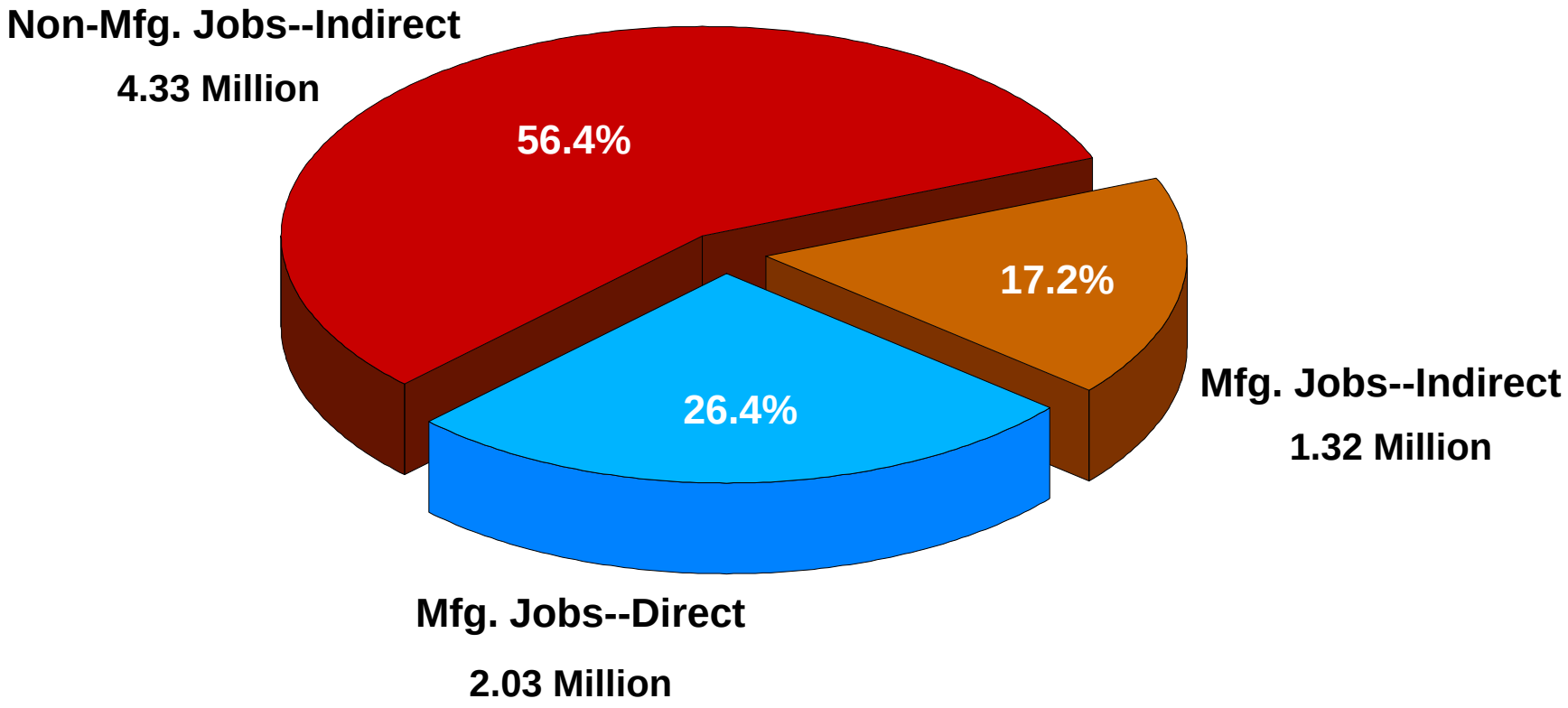


4.3 Million Non-Manufacturing Jobs Were Tied to Manufactured Exports in 1997

Source: Manufacturing & Construction Division, Bureau of the Census.
Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.

NEARLY THREE-FOURTHS OF THE EMPLOYMENT IMPACT FROM MANUFACTURED EXPORTS IS INDIRECT

Jobs Supported by Manufactured Exports, 1997



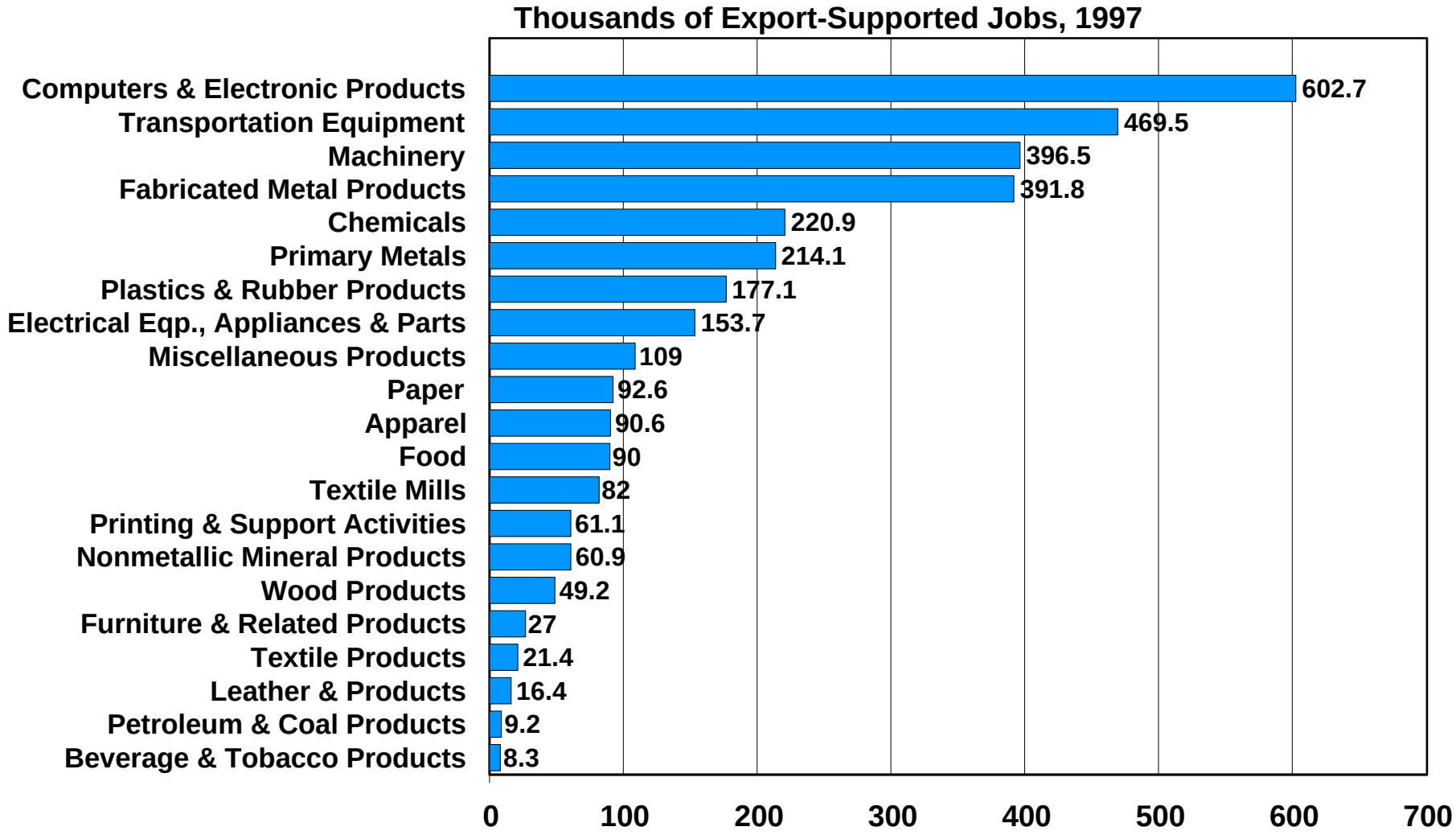
7.7 Million U.S. Jobs Were Tied to Manufactured Exports in 1997

***Note:** Direct export-related jobs refers to employment generated in manufacturing establishments producing final goods for export. Indirect jobs are those jobs generated upstream or downstream from the final production point as export activity triggers ripple effects in supporting sectors throughout the economy.*

***Source:** Manufacturing & Construction Division, Bureau of the Census.*

***Prepared by:** Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.*

NINE MAJOR MANUFACTURING SECTORS EACH DEPEND ON MANUFACTURED EXPORTS FOR OVER 100,000 JOBS

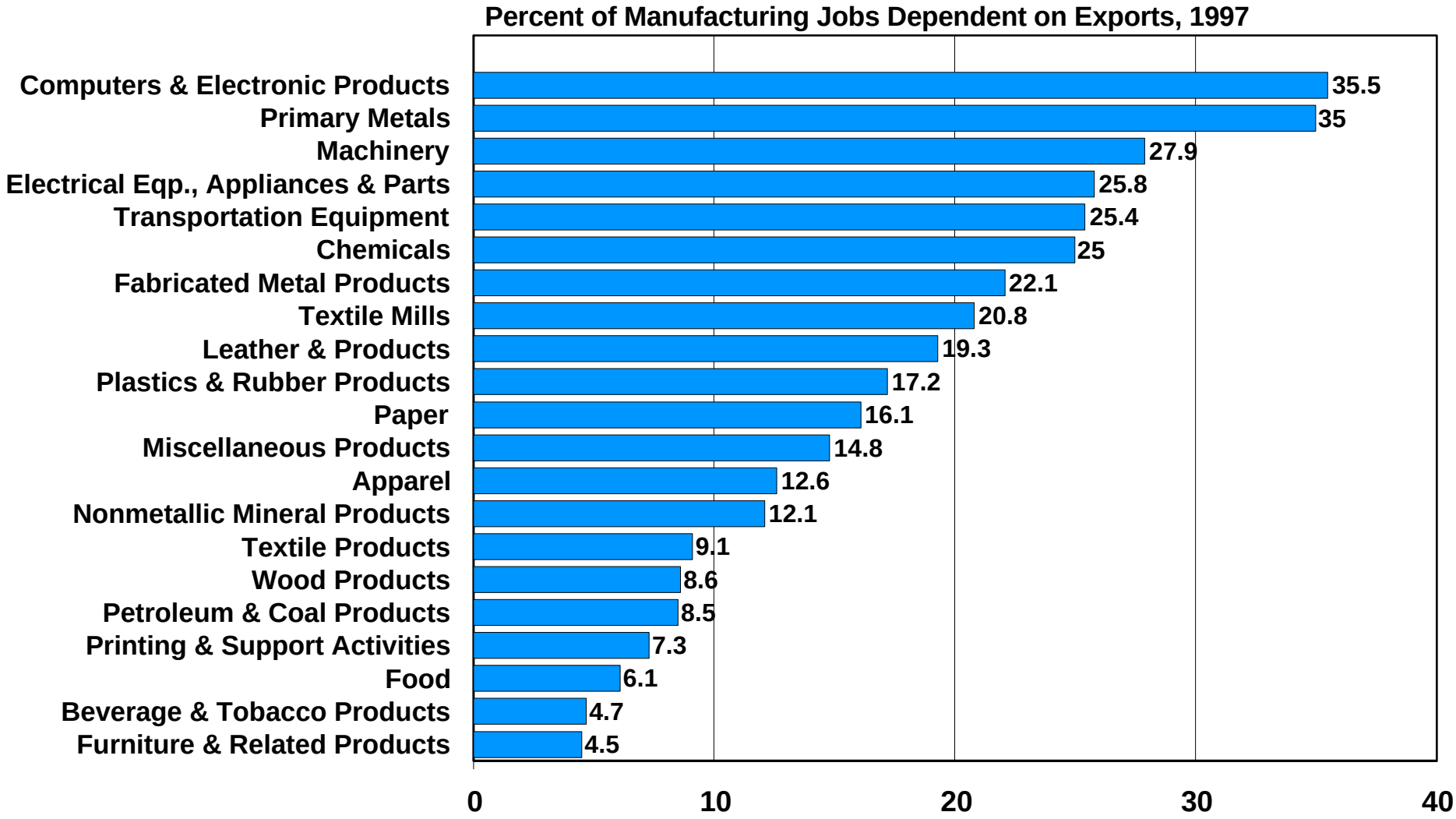


***Note:** Nationally, 3.34 million jobs in U.S. manufacturing were tied to exports of manufactures in 1997. Export-related employment figures include jobs in manufacturing establishments supported either by the production of final goods for export, or inputs to the export manufacturing process.*

***Source:** Manufacturing & Construction Division, Bureau of the Census.*

***Prepared by:** Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.*

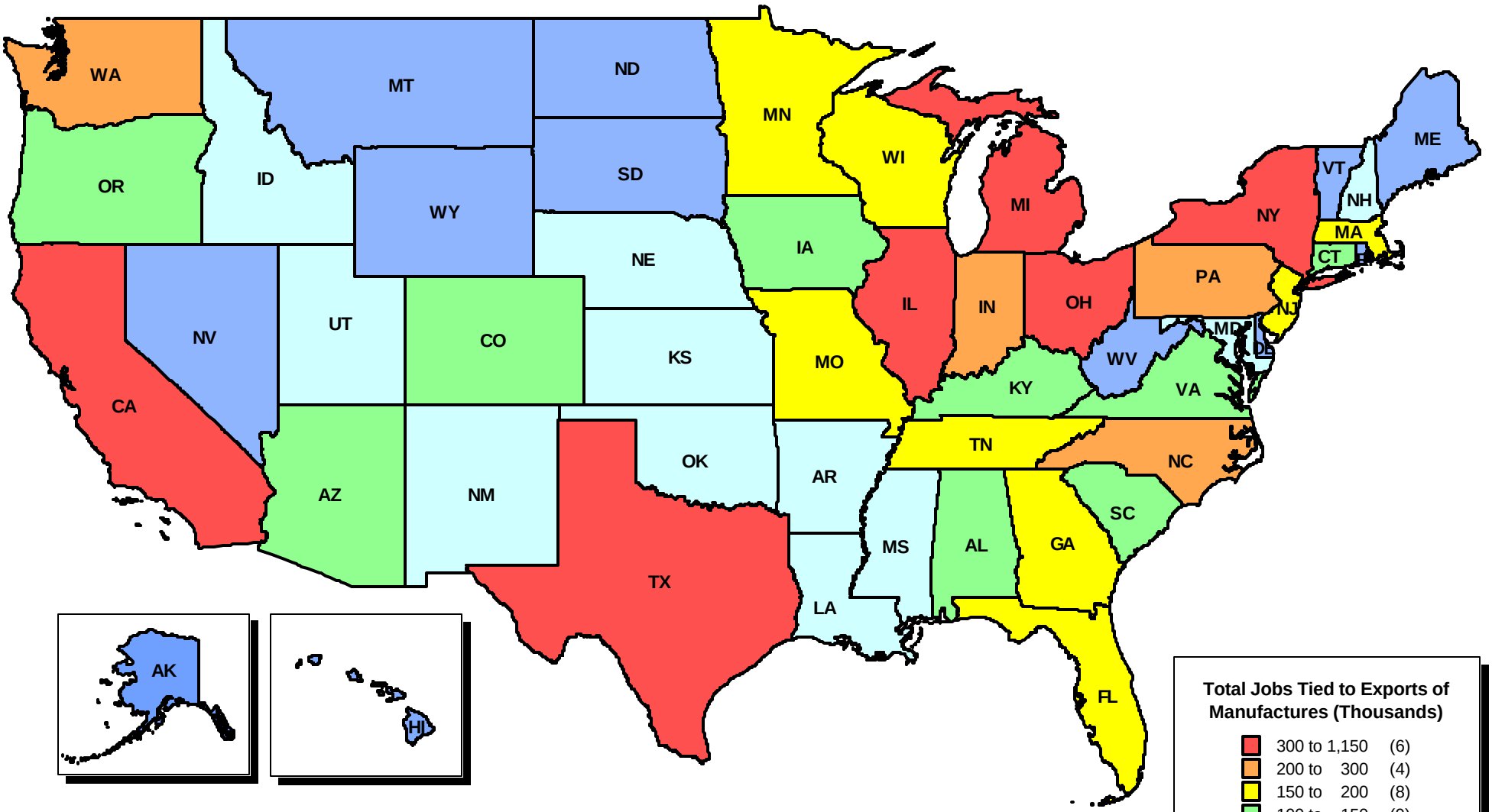
IN EIGHT MAJOR MANUFACTURING SECTORS, MORE THAN ONE IN FIVE JOBS DEPEND ON MANUFACTURED EXPORTS



***Note:** Of the 16.9 million jobs in U.S. manufacturing in 1997, 19.8 percent were tied to exports of manufactures. Export-related employment figures include jobs in manufacturing establishments supported either by the production of final goods for export, or inputs to the export manufacturing process.*
***Source:** Manufacturing & Construction Division, Bureau of the Census.*
***Prepared by:** Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.*

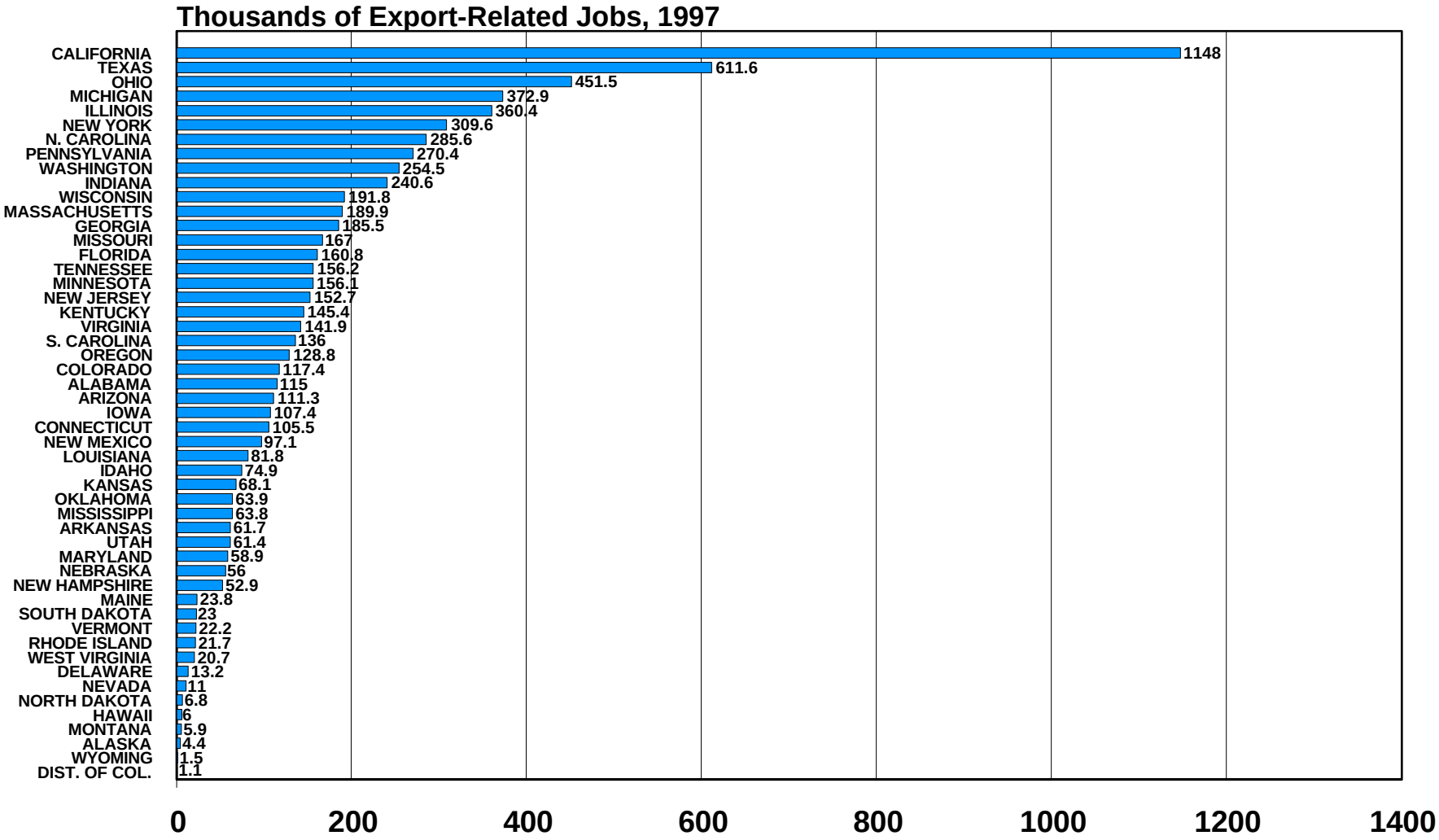
IN 27 STATES, MORE THAN 100,000 JOBS DEPEND ON MANUFACTURED EXPORTS

State Distribution of All Jobs Supported by Exports of Manufactures, 1997



Note: The production of manufactured exports and inputs to those exports supported nearly 7.7 million U.S. jobs in the manufacturing and non-manufacturing sectors in 1997.
Source: Manufacturing & Construction Division, Bureau of the Census.
Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Dept. of Commerce.

CALIFORNIA LEADS ALL STATES IN THE NUMBER OF JOBS DEPENDENT ON MANUFACTURED EXPORTS



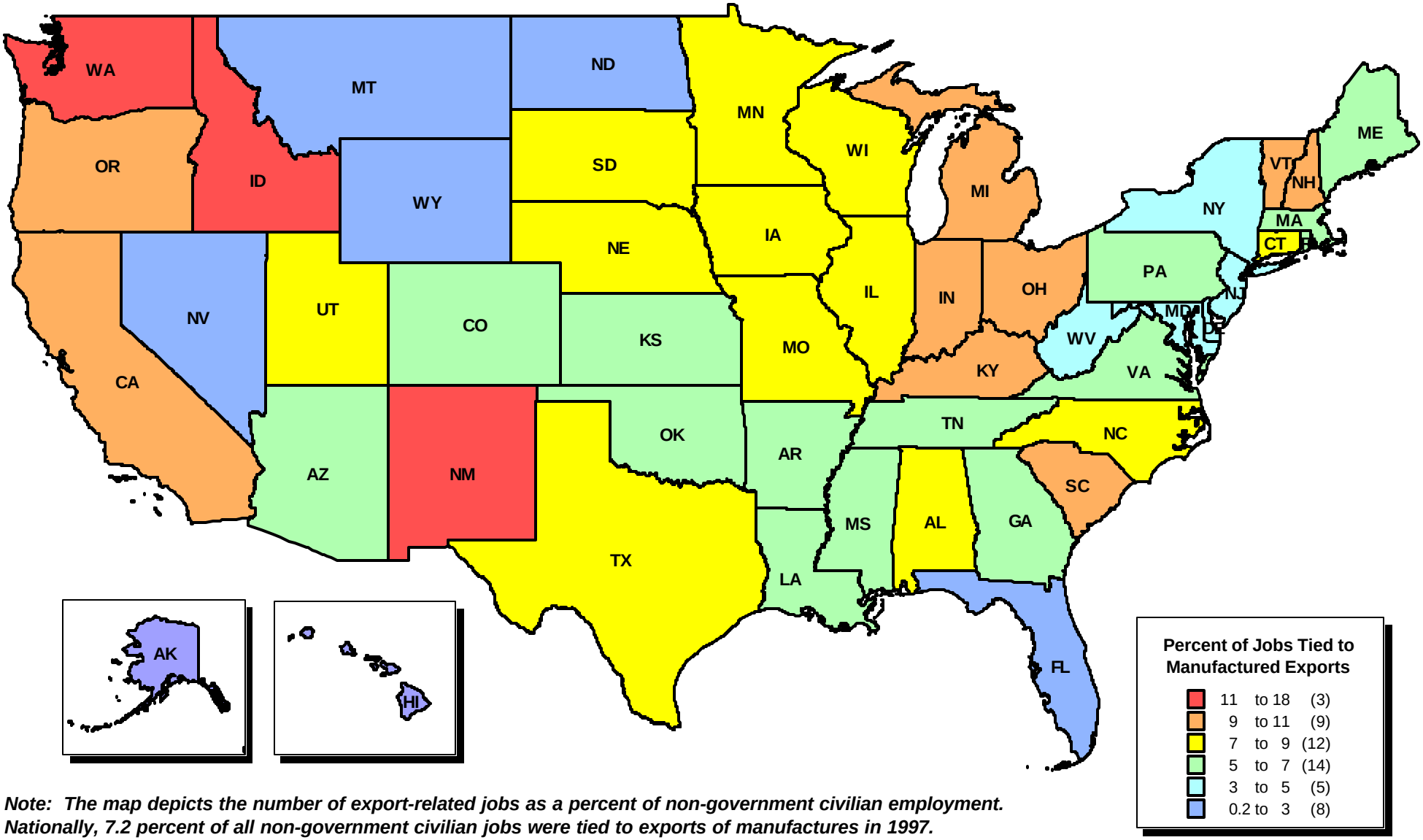
***Note:** Nationally, 7.7 million jobs were tied to exports of manufactures in 1997. Export-related employment figures include all jobs in manufacturing and non-manufacturing sectors sustained by the export of manufactured goods.*

***Source:** Manufacturing & Construction Division, Bureau of the Census.*

***Prepared by:** Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.*

IN 38 STATES, OVER FIVE PERCENT OF ALL JOBS ARE TIED TO MANUFACTURED EXPORTS

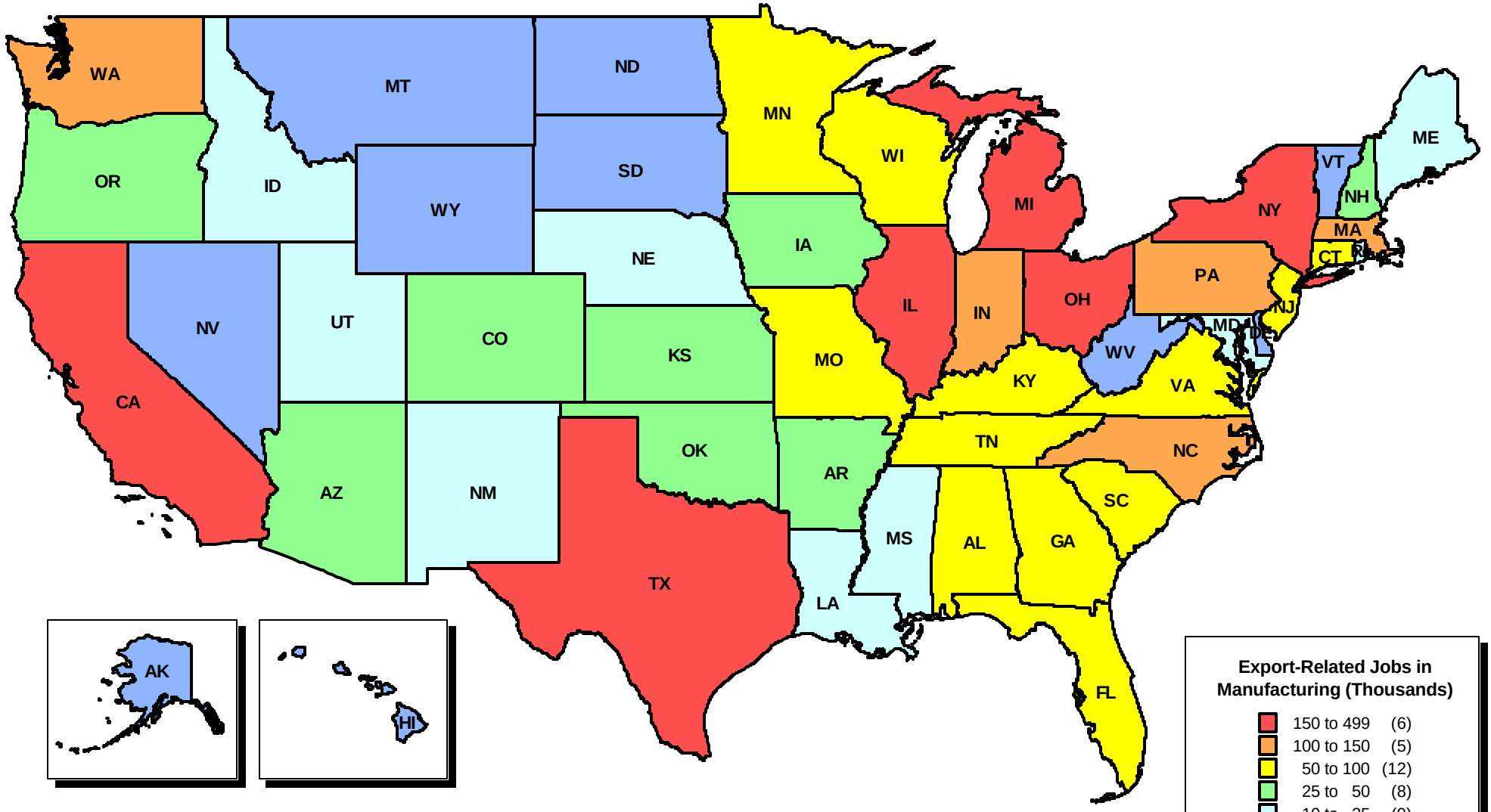
Percent of Private Sector Jobs in Each State Dependent on Exports of Manufactures, 1997



Note: The map depicts the number of export-related jobs as a percent of non-government civilian employment. Nationally, 7.2 percent of all non-government civilian jobs were tied to exports of manufactures in 1997.
Source: Manufacturing & Construction Division, Census Bureau.
Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.

ELEVEN STATES EACH DEPEND ON EXPORTS FOR OVER 100,000 MANUFACTURING JOBS

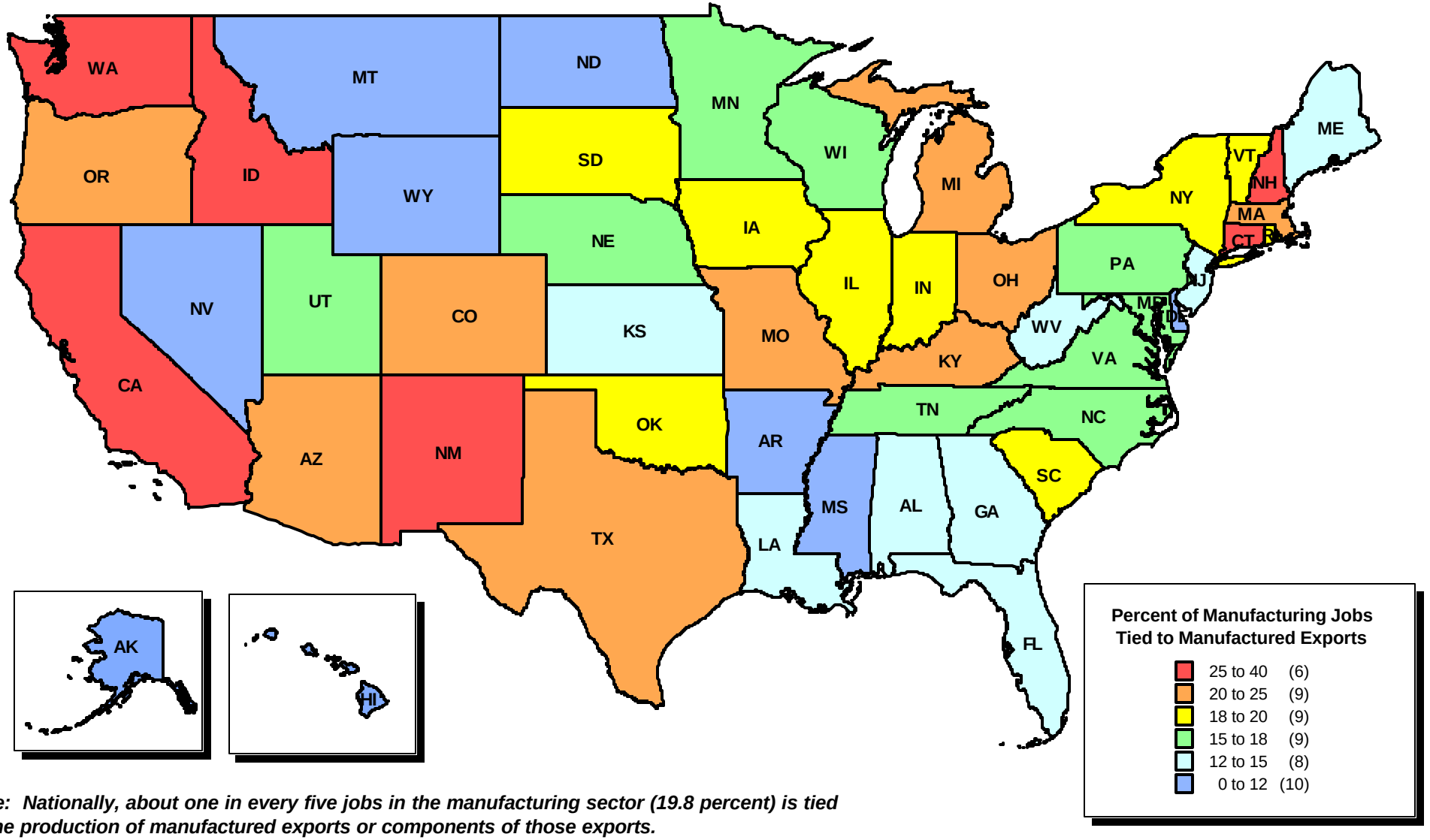
State Distribution of 3.3 Million Manufacturing Jobs Tied to Manufactured Exports in 1997



Note: The production of manufactured exports and components of those exports supported over 3.3 million U.S. manufacturing sector jobs in 1997.
Source: Manufacturing & Construction Division, Census Bureau.
Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Dept. of Commerce.

IN 15 STATES, OVER ONE-FIFTH OF MANUFACTURING JOBS DEPEND ON EXPORTS

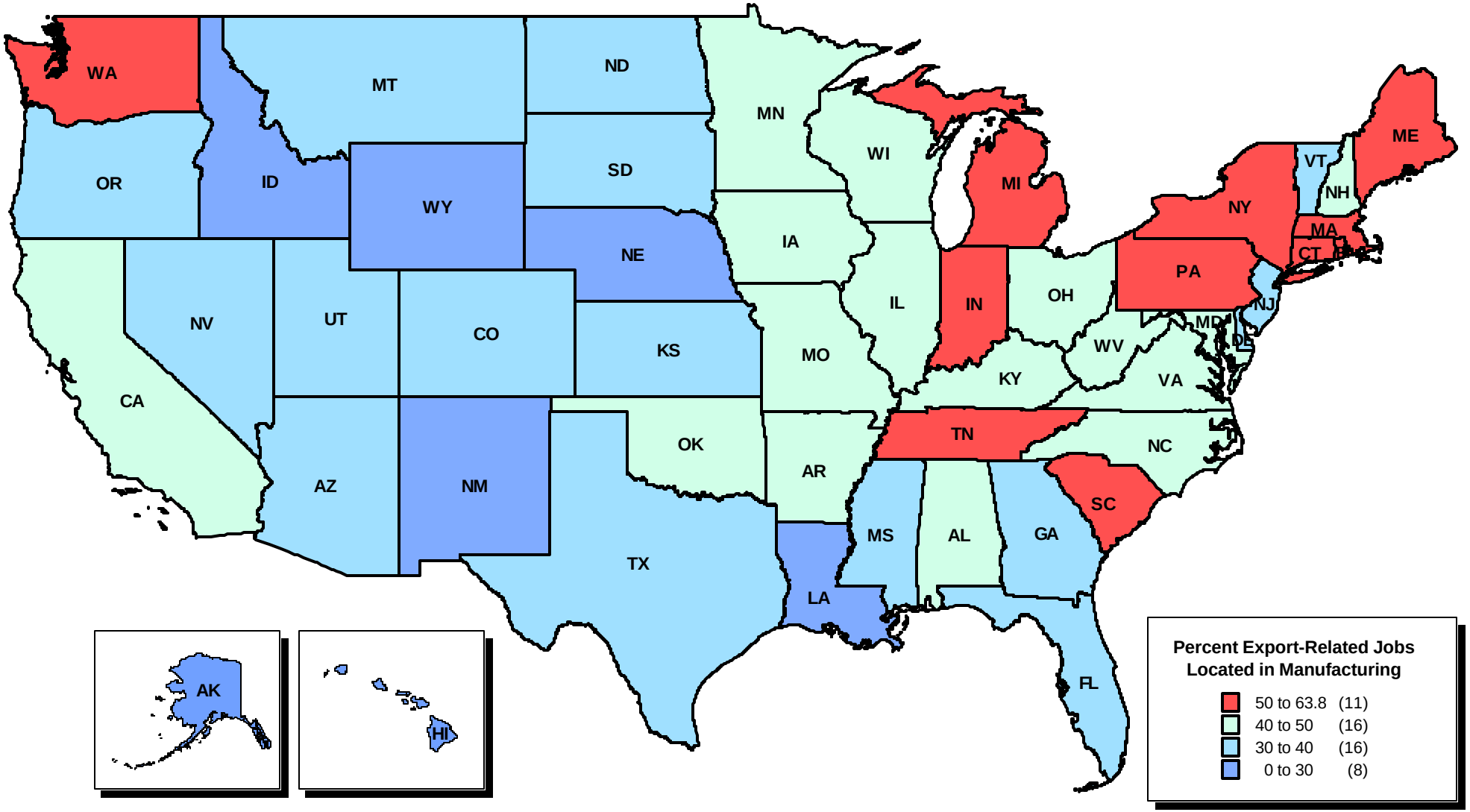
Percent of Manufacturing Jobs Supported by Manufactured Exports, 1997



Note: Nationally, about one in every five jobs in the manufacturing sector (19.8 percent) is tied to the production of manufactured exports or components of those exports.
Source: Manufacturing & Construction Division, Census Bureau.
Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Dept of Commerce.

IN 39 STATES, THERE ARE MORE NON-MANUFACTURING JOBS TIED TO EXPORTS OF MANUFACTURES THAN THERE ARE EXPORT-RELATED MANUFACTURING JOBS

Percent of Jobs Dependent on Manufactured Exports Located in Manufacturing Industries, 1997

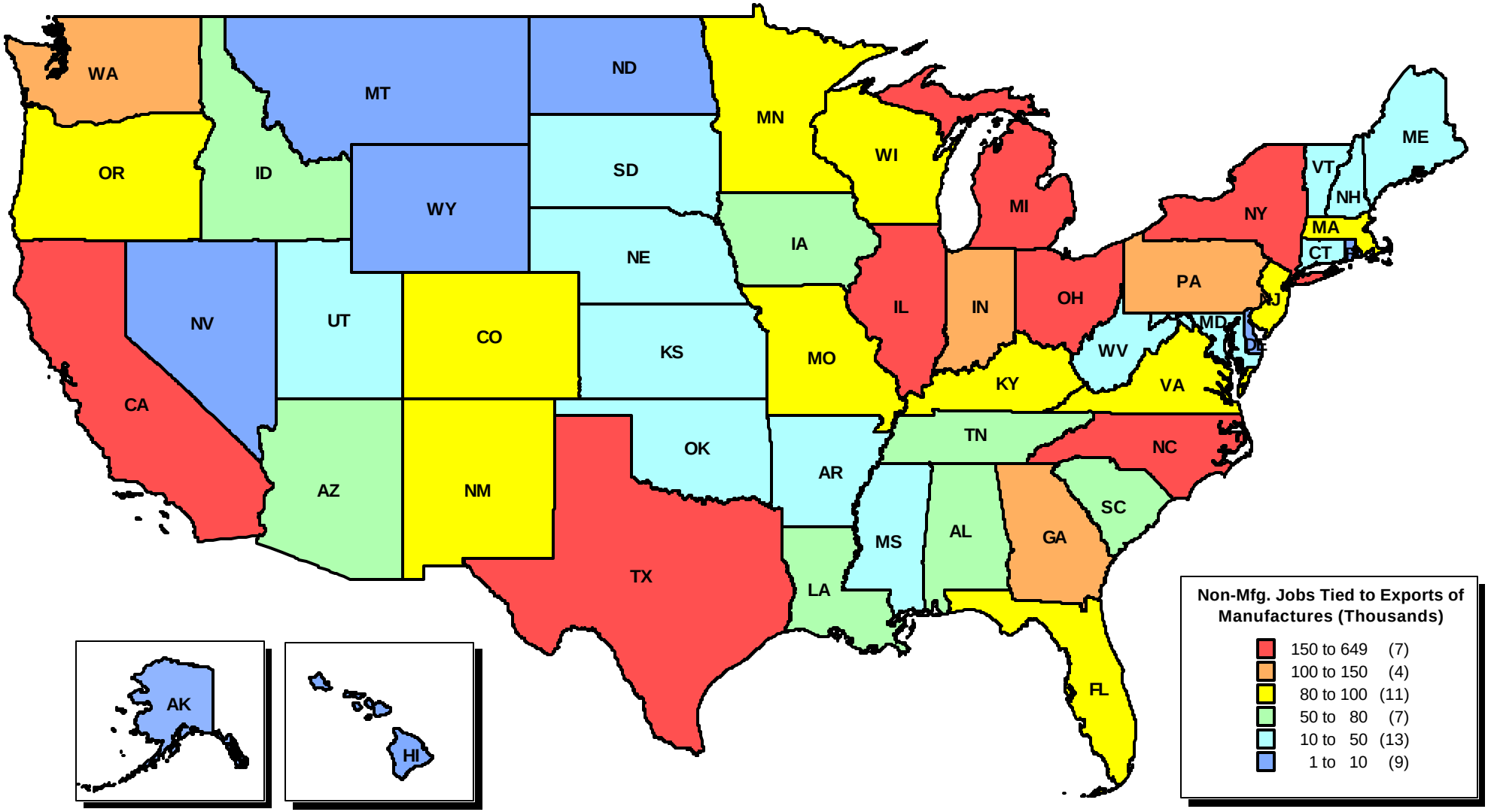


Note: There were nearly 7.68 million U.S jobs related to exports of manufactures in 1997; 3.34 million in manufacturing and 4.33 million in non-manufacturing sectors such as transportation and business services.

Source: Manufacturing & Construction Division, Census Bureau, U.S. Department of Commerce.
Prepared by: Office of Trade & Economic Analysis, International Trade Administration.

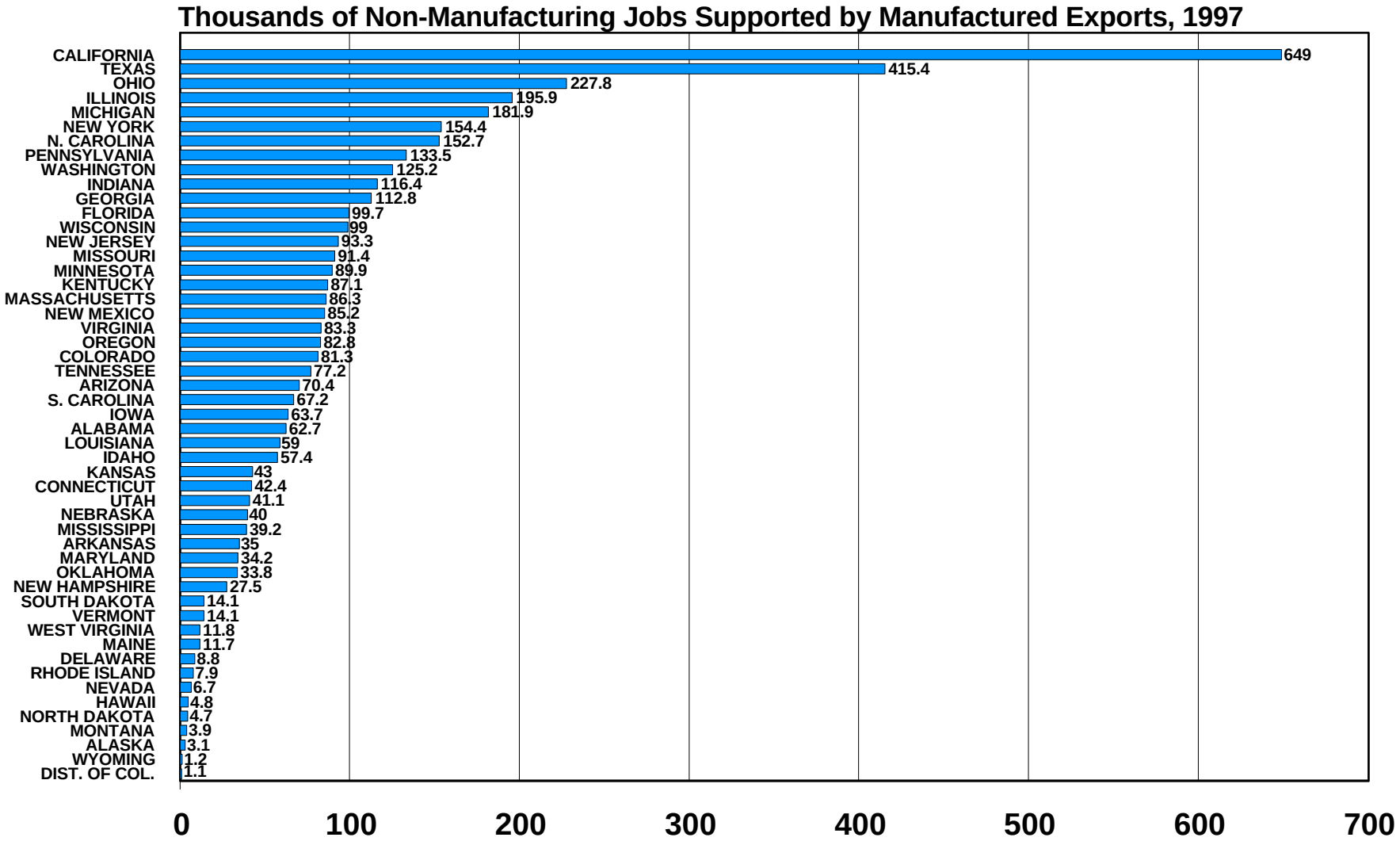
IN 11 STATES, MORE THAN 100,000 NON-MANUFACTURING JOBS DEPEND ON MANUFACTURED EXPORTS

State Distribution of All Non-Manufacturing Jobs Supported by Exports of Manufactures, 1997



Note: Manufactured exports supported over 4.33 million jobs in non-manufacturing industries such as business, financial and transportation services, wholesale & retail trade, and the agricultural and mining sectors in 1997.
Source . Manufacturing & Construction Division, Census Bureau.
Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Dept. of Commerce.

CALIFORNIA LEADS ALL STATES IN THE NUMBER OF NON-MANUFACTURING JOBS TIED TO EXPORTS OF MANUFACTURES



Note: Nationally, 4.33 million jobs in non-manufacturing sectors were tied to exports of manufactures in 1997. This number included jobs in business, financial, and transportation services, as well as wholesale and retail trade and such non-manufacturing sectors as agriculture and mining.

Source: Manufacturing & Construction Division, Bureau of the Census.

Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.

STATE AND INDUSTRY TABLES

JOBS SUPPORTED BY THE EXPORT OF MANUFACTURED GOODS

States Ranked by the Total Number of Jobs Tied To Manufactures Exports

(Thousands of Jobs; 1997 Data)

		Jobs Tied to Manu. Exports		Mfg. Jobs Tied to Manufactured Exports				Non-Manufacturing Jobs Tied to Manufactured Exports				
Rank	State	Total Number of Jobs	As % of Total Private Sector Jobs	Direct Export-Related	Indirect Export-Related	Total Export-Related	Export Empl. as % of Total Mfg. Empl.	Business Services	Transpor-tation Services	Wholesale & Retail Trade	Other Non-Mfg. Sectors	Total Non-Mfg. Sectors
1	California	**1,147.9**	9.8%	288.8	210.1	498.9	27.6%	85.7	79.6	217.6	266.1	649.0
2	Texas	**611.6**	8.1%	116.3	79.9	196.2	20.4%	49.4	62.0	114.1	189.9	415.4
3	Ohio	**451.5**	9.5%	116.3	107.4	223.7	22.7%	34.2	37.8	72.6	83.2	227.8
4	Michigan	**372.9**	9.5%	100.2	90.8	191.0	22.9%	37.8	26.7	54.9	62.5	181.9
5	Illinois	**360.4**	7.1%	93.7	70.8	164.5	18.5%	28.5	33.2	65.2	69.0	195.9
6	New York	**309.6**	4.5%	110.1	45.1	155.2	19.7%	24.5	26.7	64.4	38.8	154.4
7	North Carolina	**285.6**	8.9%	77.2	55.7	132.9	17.2%	19.9	23.2	49.1	60.5	152.7
8	Pennsylvania	**270.4**	5.6%	84.1	52.8	136.9	16.6%	23.3	25.1	45.2	39.9	133.5
9	Washington	**254.6**	11.7%	90.6	38.8	129.4	39.4%	15.1	18.3	34.7	57.1	125.2
10	Indiana	**240.7**	9.5%	66.9	57.4	124.3	19.9%	12.1	20.9	35.2	48.2	116.4
11	Wisconsin	**191.9**	8.1%	56.7	36.2	92.9	16.5%	11.7	13.5	29.0	44.8	99.0
12	Massachusetts	**189.9**	6.9%	65.8	37.8	103.6	24.8%	14.2	11.6	30.5	30.0	86.3
13	Georgia	**185.5**	5.9%	46.5	26.2	72.7	13.6%	16.8	18.4	37.2	40.4	112.8
14	Missouri	**167.1**	7.1%	44.2	31.5	75.7	20.4%	10.8	14.9	29.1	36.6	91.4
15	Florida	**160.8**	2.8%	47.2	13.9	61.1	14.1%	10.3	19.7	42.2	27.5	99.7
16	Tennessee	**156.2**	6.8%	46.0	33.0	79.0	16.3%	7.8	13.8	27.7	27.9	77.2
17	Minnesota	**156.1**	7.0%	40.2	26.0	66.2	17.3%	15.6	11.7	28.9	33.7	89.9
18	New Jersey	**152.7**	4.8%	38.7	20.7	59.4	14.5%	23.2	15.2	37.5	17.4	93.3
19	Kentucky	**145.4**	9.9%	27.2	31.1	58.3	20.2%	7.4	13.7	26.4	39.6	87.1
20	Virginia	**142.0**	5.2%	40.3	18.4	58.7	15.8%	8.6	13.1	22.3	39.3	83.3
21	South Carolina	**136.0**	9.3%	40.4	28.4	68.8	19.9%	7.8	12.0	17.1	30.3	67.2
22	Oregon	**128.8**	9.5%	29.4	16.6	46.0	21.6%	10.1	10.4	24.5	37.8	82.8
23	Colorado	**117.4**	6.8%	22.4	13.7	36.1	20.9%	9.5	9.8	25.0	37.0	81.3
24	Alabama	**115.0**	7.3%	32.1	20.2	52.3	14.8%	5.9	11.0	20.6	25.2	62.7
25	Arizona	**111.3**	6.4%	26.5	14.4	40.9	21.1%	9.4	11.0	18.9	31.1	70.4
26	Iowa	**107.4**	8.4%	27.8	15.9	43.7	18.5%	4.7	9.1	18.9	31.0	63.7
27	Connecticut	**105.6**	7.5%	40.4	22.8	63.2	25.0%	9.3	5.5	14.5	13.1	42.4
28	New Mexico	**97.1**	17.3%	6.5	5.4	11.9	30.0%	11.5	9.9	15.9	47.9	85.2
29	Louisiana	**81.8**	5.3%	15.3	7.5	22.8	13.8%	4.1	12.1	16.5	26.3	59.0

JOBS SUPPORTED BY THE EXPORT OF MANUFACTURED GOODS

States Ranked by the Total Number of Jobs Tied To Manufactures Exports

(Thousands of Jobs; 1997 Data)

		Jobs Tied to Manu. Exports		Mfg. Jobs Tied to Manufactured Exports				Non-Manufacturing Jobs Tied to Manufactured Exports				
Rank	State	Total Number of Jobs	As % of Total Private Sector Jobs	Direct Export-Related	Indirect Export-Related	Total Export-Related	Export Empl. as % of Total Mfg. Empl.	Business Services	Transpor-tation Services	Wholesale & Retail Trade	Other Non-Mfg. Sectors	Total Non-Mfg. Sectors
30	Idaho	**74.9**	16.5%	9.6	7.9	17.5	26.4%	5.4	5.5	22.0	24.5	57.4
31	Kansas	**68.1**	6.2%	18.6	6.5	25.1	13.0%	2.8	4.6	11.1	24.5	43.0
32	Oklahoma	**63.9**	5.4%	21.3	8.8	30.1	18.3%	2.7	5.1	12.3	13.7	33.8
33	Mississippi	**63.8**	6.9%	16.8	7.8	24.6	10.8%	2.2	6.3	9.2	21.5	39.2
34	Arkansas	**61.8**	6.3%	17.9	8.9	26.8	11.6%	2.5	6.3	9.6	16.6	35.0
35	Utah	**61.4**	7.2%	11.5	8.8	20.3	17.0%	3.9	5.7	14.5	17.0	41.1
36	Maryland	**58.9**	3.1%	18.7	6.0	24.7	15.1%	5.2	5.8	15.0	8.2	34.2
37	Nebraska	**56.0**	7.1%	11.5	4.5	16.0	15.0%	2.4	4.0	9.7	23.9	40.0
38	New Hampshire	**52.9**	10.5%	14.3	11.1	25.4	25.7%	3.8	3.1	8.5	12.1	27.5
39	Maine	**23.8**	5.0%	8.8	3.3	12.1	14.7%	0.9	2.0	4.0	4.8	11.7
40	South Dakota	**23.0**	7.0%	5.8	3.1	8.9	19.1%	1.0	1.4	6.2	5.5	14.1
41	Vermont	**22.2**	9.0%	5.6	2.5	8.1	19.1%	1.4	1.7	3.6	7.4	14.1
42	Rhode Island	**21.8**	5.5%	9.8	4.1	13.9	18.4%	1.2	1.0	3.2	2.5	7.9
43	West Virginia	**20.7**	3.5%	6.4	2.5	8.9	12.2%	0.7	2.5	4.3	4.3	11.8
44	Delaware	**13.2**	3.9%	3.4	1.0	4.4	10.7%	4.2	1.0	2.1	1.5	8.8
45	Nevada	**11.0**	1.4%	3.9	0.4	4.3	11.4%	0.4	1.8	3.6	0.9	6.7
46	North Dakota	**6.8**	2.4%	1.8	0.3	2.1	9.5%	0.1	0.8	2.5	1.3	4.7
47	Hawaii	**6.0**	1.4%	1.1	0.1	1.2	7.9%	0.2	1.9	2.2	0.5	4.8
48	Montana	**5.9**	1.8%	1.8	0.2	2.0	10.2%	0.1	0.8	2.0	1.0	3.9
49	Alaska	**4.3**	2.2%	1.1	0.1	1.2	11.1%	0.1	1.3	0.9	0.8	3.1
50	Wyoming	**1.5**	0.8%	0.3	0.0	0.3	3.6%	0.1	0.3	0.7	0.1	1.2
51	Dist. of Col.	**1.1**	0.3%	0.0	0.0	0.0	0.0%	0.2	0.3	0.6	0.0	1.1
	TOTAL JOBS	**7,676.2**	7.2%	2,027.8	1,316.4	3,344.2	19.8%	570.7	653.1	1,383.5	1,724.7	4,332.0

Note: Numbers may not add to totals due to rounding.

Definitions: Direct export-related jobs refer to employment generated in manufacturing establishments producing final goods for export. Indirect jobs are those jobs generated upstream or downstream from the final production point as export activity triggers ripple effects in supporting sectors throughout the economy.

Source: Manufacturing & Construction Division, Bureau of the Census.

Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.

JOBS SUPPORTED BY THE EXPORT OF MANUFACTURED GOODS

States Ranked by Manufacturing Jobs Tied to Manufactured Exports

(Thousands of Jobs; 1997 Data)

		Jobs Tied to Manu. Exports		Mfg. Jobs Tied to Manufactured Exports				Non-Manufacturing Jobs Tied to Manufactured Exports				
Rank	State	Total Number of Jobs	As % of Total Private Sector Jobs	Direct Export-Related	Indirect Export-Related	Total Export-Related	Export Empl. as % of Total Mfg. Empl.	Business Services	Transpor-tation Services	Wholesale & Retail Trade	Other Non-Mfg. Sectors	Total Non-Mfg. Sectors
1	California	1,147.9	9.8%	288.8	210.1	**498.9**	27.6%	85.7	79.6	217.6	266.1	649.0
2	Ohio	451.5	9.5%	116.3	107.4	**223.7**	22.7%	34.2	37.8	72.6	83.2	227.8
3	Texas	611.6	8.1%	116.3	79.9	**196.2**	20.4%	49.4	62.0	114.1	189.9	415.4
4	Michigan	372.9	9.5%	100.2	90.8	**191.0**	22.9%	37.8	26.7	54.9	62.5	181.9
5	Illinois	360.4	7.1%	93.7	70.8	**164.5**	18.5%	28.5	33.2	65.2	69.0	195.9
6	New York	309.6	4.5%	110.1	45.1	**155.2**	19.7%	24.5	26.7	64.4	38.8	154.4
7	Pennsylvania	270.4	5.6%	84.1	52.8	**136.9**	16.6%	23.3	25.1	45.2	39.9	133.5
8	North Carolina	285.6	8.9%	77.2	55.7	**132.9**	17.2%	19.9	23.2	49.1	60.5	152.7
9	Washington	254.6	11.7%	90.6	38.8	**129.4**	39.4%	15.1	18.3	34.7	57.1	125.2
10	Indiana	240.7	9.5%	66.9	57.4	**124.3**	19.9%	12.1	20.9	35.2	48.2	116.4
11	Massachusetts	189.9	6.9%	65.8	37.8	**103.6**	24.8%	14.2	11.6	30.5	30.0	86.3
12	Wisconsin	191.9	8.1%	56.7	36.2	**92.9**	16.5%	11.7	13.5	29.0	44.8	99.0
13	Tennessee	156.2	6.8%	46.0	33.0	**79.0**	16.3%	7.8	13.8	27.7	27.9	77.2
14	Missouri	167.1	7.1%	44.2	31.5	**75.7**	20.4%	10.8	14.9	29.1	36.6	91.4
15	Georgia	185.5	5.9%	46.5	26.2	**72.7**	13.6%	16.8	18.4	37.2	40.4	112.8
16	South Carolina	136.0	9.3%	40.4	28.4	**68.8**	19.9%	7.8	12.0	17.1	30.3	67.2
17	Minnesota	156.1	7.0%	40.2	26.0	**66.2**	17.3%	15.6	11.7	28.9	33.7	89.9
18	Connecticut	105.6	7.5%	40.4	22.8	**63.2**	25.0%	9.3	5.5	14.5	13.1	42.4
19	Florida	160.8	2.8%	47.2	13.9	**61.1**	14.1%	10.3	19.7	42.2	27.5	99.7
20	New Jersey	152.7	4.8%	38.7	20.7	**59.4**	14.5%	23.2	15.2	37.5	17.4	93.3
21	Virginia	142.0	5.2%	40.3	18.4	**58.7**	15.8%	8.6	13.1	22.3	39.3	83.3
22	Kentucky	145.4	9.9%	27.2	31.1	**58.3**	20.2%	7.4	13.7	26.4	39.6	87.1
23	Alabama	115.0	7.3%	32.1	20.2	**52.3**	14.8%	5.9	11.0	20.6	25.2	62.7
24	Oregon	128.8	9.5%	29.4	16.6	**46.0**	21.6%	10.1	10.4	24.5	37.8	82.8
25	Iowa	107.4	8.4%	27.8	15.9	**43.7**	18.5%	4.7	9.1	18.9	31.0	63.7
26	Arizona	111.3	6.4%	26.5	14.4	**40.9**	21.1%	9.4	11.0	18.9	31.1	70.4
27	Colorado	117.4	6.8%	22.4	13.7	**36.1**	20.9%	9.5	9.8	25.0	37.0	81.3
28	Oklahoma	63.9	5.4%	21.3	8.8	**30.1**	18.3%	2.7	5.1	12.3	13.7	33.8
29	Arkansas	61.8	6.3%	17.9	8.9	**26.8**	11.6%	2.5	6.3	9.6	16.6	35.0

JOBS SUPPORTED BY THE EXPORT OF MANUFACTURED GOODS

States Ranked by Manufacturing Jobs Tied to Manufactured Exports

(Thousands of Jobs; 1997 Data)

		Jobs Tied to Manu. Exports		Mfg. Jobs Tied to Manufactured Exports				Non-Manufacturing Jobs Tied to Manufactured Exports				
Rank	State	Total Number of Jobs	As % of Total Private Sector Jobs	Direct Export-Related	Indirect Export-Related	Total Export-Related	Export Empl. as % of Total Mfg. Empl.	Business Services	Transpor-tation Services	Wholesale & Retail Trade	Other Non-Mfg. Sectors	Total Non-Mfg. Sectors
30	New Hampshire	52.9	10.5%	14.3	11.1	**25.4**	25.7%	3.8	3.1	8.5	12.1	27.5
31	Kansas	68.1	6.2%	18.6	6.5	**25.1**	13.0%	2.8	4.6	11.1	24.5	43.0
32	Maryland	58.9	3.1%	18.7	6.0	**24.7**	15.1%	5.2	5.8	15.0	8.2	34.2
33	Mississippi	63.8	6.9%	16.8	7.8	**24.6**	10.8%	2.2	6.3	9.2	21.5	39.2
34	Louisiana	81.8	5.3%	15.3	7.5	**22.8**	13.8%	4.1	12.1	16.5	26.3	59.0
35	Utah	61.4	7.2%	11.5	8.8	**20.3**	17.0%	3.9	5.7	14.5	17.0	41.1
36	Idaho	74.9	16.5%	9.6	7.9	**17.5**	26.4%	5.4	5.5	22.0	24.5	57.4
37	Nebraska	56.0	7.1%	11.5	4.5	**16.0**	15.0%	2.4	4.0	9.7	23.9	40.0
38	Rhode Island	21.8	5.5%	9.8	4.1	**13.9**	18.4%	1.2	1.0	3.2	2.5	7.9
39	Maine	23.8	5.0%	8.8	3.3	**12.1**	14.7%	0.9	2.0	4.0	4.8	11.7
40	New Mexico	97.1	17.3%	6.5	5.4	**11.9**	30.0%	11.5	9.9	15.9	47.9	85.2
41	South Dakota	23.0	7.0%	5.8	3.1	**8.9**	19.1%	1.0	1.4	6.2	5.5	14.1
42	West Virginia	20.7	3.5%	6.4	2.5	**8.9**	12.2%	0.7	2.5	4.3	4.3	11.8
43	Vermont	22.2	9.0%	5.6	2.5	**8.1**	19.1%	1.4	1.7	3.6	7.4	14.1
44	Delaware	13.2	3.9%	3.4	1.0	**4.4**	10.7%	4.2	1.0	2.1	1.5	8.8
45	Nevada	11.0	1.4%	3.9	0.4	**4.3**	11.4%	0.4	1.8	3.6	0.9	6.7
46	North Dakota	6.8	2.4%	1.8	0.3	**2.1**	9.5%	0.1	0.8	2.5	1.3	4.7
47	Montana	5.9	1.8%	1.8	0.2	**2.0**	10.2%	0.1	0.8	2.0	1.0	3.9
48	Alaska	4.3	2.2%	1.1	0.1	**1.2**	11.1%	0.1	1.3	0.9	0.8	3.1
49	Hawaii	6.0	1.4%	1.1	0.1	**1.2**	7.9%	0.2	1.9	2.2	0.5	4.8
50	Wyoming	1.5	0.8%	0.3	0.0	**0.3**	3.6%	0.1	0.3	0.7	0.1	1.2
51	Dist. of Col.	1.1	0.3%	0.0	0.0	**0.0**	0.0%	0.2	0.3	0.6	0.0	1.1
	TOTAL JOBS	7,676.2	7.2%	2,027.8	1,316.4	**3,344.2**	19.8%	570.7	653.1	1,383.5	1,724.7	4,332.0

Note: Numbers may not add to totals due to rounding.

Definitions: Direct export-related jobs refer to employment generated in manufacturing establishments producing final goods for export. Indirect jobs are those jobs generated upstream or downstream from the final production point as export activity triggers ripple effects in supporting sectors throughout the economy.

Source: Manufacturing & Construction Division, Bureau of the Census.

Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.

JOBS SUPPORTED BY THE EXPORT OF MANUFACTURED GOODS

States Ranked by Non-Manufacturing Jobs Tied to Manufactured Exports

(Thousands of Jobs; 1997 Data)

		Jobs Tied to Manu. Exports		Mfg. Jobs Tied to Manufactured Exports				Non-Manufacturing Jobs Tied to Manufactured Exports				
Rank	State	Total Number of Jobs	As % of Total Private Sector Jobs	Direct Export-Related	Indirect Export-Related	Total Export-Related	Export Empl. as % of Total Mfg. Empl.	Business Services	Transportation Services	Wholesale & Retail Trade	Other Non-Mfg. Sectors	Total Non-Mfg. Sectors
1	California	1,147.9	9.8%	288.8	210.1	498.9	27.6%	85.7	79.6	217.6	266.1	**649.0**
2	Texas	611.6	8.1%	116.3	79.9	196.2	20.4%	49.4	62.0	114.1	189.9	**415.4**
3	Ohio	451.5	9.5%	116.3	107.4	223.7	22.7%	34.2	37.8	72.6	83.2	**227.8**
4	Illinois	360.4	7.1%	93.7	70.8	164.5	18.5%	28.5	33.2	65.2	69.0	**195.9**
5	Michigan	372.9	9.5%	100.2	90.8	191.0	22.9%	37.8	26.7	54.9	62.5	**181.9**
6	New York	309.6	4.5%	110.1	45.1	155.2	19.7%	24.5	26.7	64.4	38.8	**154.4**
7	North Carolina	285.6	8.9%	77.2	55.7	132.9	17.2%	19.9	23.2	49.1	60.5	**152.7**
8	Pennsylvania	270.4	5.6%	84.1	52.8	136.9	16.6%	23.3	25.1	45.2	39.9	**133.5**
9	Washington	254.6	11.7%	90.6	38.8	129.4	39.4%	15.1	18.3	34.7	57.1	**125.2**
10	Indiana	240.7	9.5%	66.9	57.4	124.3	19.9%	12.1	20.9	35.2	48.2	**116.4**
11	Georgia	185.5	5.9%	46.5	26.2	72.7	13.6%	16.8	18.4	37.2	40.4	**112.8**
12	Florida	160.8	2.8%	47.2	13.9	61.1	14.1%	10.3	19.7	42.2	27.5	**99.7**
13	Wisconsin	191.9	8.1%	56.7	36.2	92.9	16.5%	11.7	13.5	29.0	44.8	**99.0**
14	New Jersey	152.7	4.8%	38.7	20.7	59.4	14.5%	23.2	15.2	37.5	17.4	**93.3**
15	Missouri	167.1	7.1%	44.2	31.5	75.7	20.4%	10.8	14.9	29.1	36.6	**91.4**
16	Minnesota	156.1	7.0%	40.2	26.0	66.2	17.3%	15.6	11.7	28.9	33.7	**89.9**
17	Kentucky	145.4	9.9%	27.2	31.1	58.3	20.2%	7.4	13.7	26.4	39.6	**87.1**
18	Massachusetts	189.9	6.9%	65.8	37.8	103.6	24.8%	14.2	11.6	30.5	30.0	**86.3**
19	New Mexico	97.1	17.3%	6.5	5.4	11.9	30.0%	11.5	9.9	15.9	47.9	**85.2**
20	Virginia	142.0	5.2%	40.3	18.4	58.7	15.8%	8.6	13.1	22.3	39.3	**83.3**
21	Oregon	128.8	9.5%	29.4	16.6	46.0	21.6%	10.1	10.4	24.5	37.8	**82.8**
22	Colorado	117.4	6.8%	22.4	13.7	36.1	20.9%	9.5	9.8	25.0	37.0	**81.3**
23	Tennessee	156.2	6.8%	46.0	33.0	79.0	16.3%	7.8	13.8	27.7	27.9	**77.2**
24	Arizona	111.3	6.4%	26.5	14.4	40.9	21.1%	9.4	11.0	18.9	31.1	**70.4**
25	South Carolina	136.0	9.3%	40.4	28.4	68.8	19.9%	7.8	12.0	17.1	30.3	**67.2**
26	Iowa	107.4	8.4%	27.8	15.9	43.7	18.5%	4.7	9.1	18.9	31.0	**63.7**
27	Alabama	115.0	7.3%	32.1	20.2	52.3	14.8%	5.9	11.0	20.6	25.2	**62.7**
28	Louisiana	81.8	5.3%	15.3	7.5	22.8	13.8%	4.1	12.1	16.5	26.3	**59.0**
29	Idaho	74.9	16.5%	9.6	7.9	17.5	26.4%	5.4	5.5	22.0	24.5	**57.4**

JOBS SUPPORTED BY THE EXPORT OF MANUFACTURED GOODS

States Ranked by Non-Manufacturing Jobs Tied to Manufactured Exports

(Thousands of Jobs; 1997 Data)

		Jobs Tied to Manu. Exports		Mfg. Jobs Tied to Manufactured Exports				Non-Manufacturing Jobs Tied to Manufactured Exports				
Rank	State	Total Number of Jobs	As % of Total Private Sector Jobs	Direct Export-Related	Indirect Export-Related	Total Export-Related	Export Empl. as % of Total Mfg. Empl.	Business Services	Transpor-tation Services	Wholesale & Retail Trade	Other Non-Mfg. Sectors	Total Non-Mfg. Sectors
30	**Kansas**	68.1	6.2%	18.6	6.5	25.1	13.0%	2.8	4.6	11.1	24.5	**43.0**
31	**Connecticut**	105.6	7.5%	40.4	22.8	63.2	25.0%	9.3	5.5	14.5	13.1	**42.4**
32	**Utah**	61.4	7.2%	11.5	8.8	20.3	17.0%	3.9	5.7	14.5	17.0	**41.1**
33	**Nebraska**	56.0	7.1%	11.5	4.5	16.0	15.0%	2.4	4.0	9.7	23.9	**40.0**
34	**Mississippi**	63.8	6.9%	16.8	7.8	24.6	10.8%	2.2	6.3	9.2	21.5	**39.2**
35	**Arkansas**	61.8	6.3%	17.9	8.9	26.8	11.6%	2.5	6.3	9.6	16.6	**35.0**
36	**Maryland**	58.9	3.1%	18.7	6.0	24.7	15.1%	5.2	5.8	15.0	8.2	**34.2**
37	**Oklahoma**	63.9	5.4%	21.3	8.8	30.1	18.3%	2.7	5.1	12.3	13.7	**33.8**
38	**New Hampshire**	52.9	10.5%	14.3	11.1	25.4	25.7%	3.8	3.1	8.5	12.1	**27.5**
39	**South Dakota**	23.0	7.0%	5.8	3.1	8.9	19.1%	1.0	1.4	6.2	5.5	**14.1**
40	**Vermont**	22.2	9.0%	5.6	2.5	8.1	19.1%	1.4	1.7	3.6	7.4	**14.1**
41	**West Virginia**	20.7	3.5%	6.4	2.5	8.9	12.2%	0.7	2.5	4.3	4.3	**11.8**
42	**Maine**	23.8	5.0%	8.8	3.3	12.1	14.7%	0.9	2.0	4.0	4.8	**11.7**
43	**Delaware**	13.2	3.9%	3.4	1.0	4.4	10.7%	4.2	1.0	2.1	1.5	**8.8**
44	**Rhode Island**	21.8	5.5%	9.8	4.1	13.9	18.4%	1.2	1.0	3.2	2.5	**7.9**
45	**Nevada**	11.0	1.4%	3.9	0.4	4.3	11.4%	0.4	1.8	3.6	0.9	**6.7**
46	**Hawaii**	6.0	1.4%	1.1	0.1	1.2	7.9%	0.2	1.9	2.2	0.5	**4.8**
47	**North Dakota**	6.8	2.4%	1.8	0.3	2.1	9.5%	0.1	0.8	2.5	1.3	**4.7**
48	**Montana**	5.9	1.8%	1.8	0.2	2.0	10.2%	0.1	0.8	2.0	1.0	**3.9**
49	**Alaska**	4.3	2.2%	1.1	0.1	1.2	11.1%	0.1	1.3	0.9	0.8	**3.1**
50	**Wyoming**	1.5	0.8%	0.3	0.0	0.3	3.6%	0.1	0.3	0.7	0.1	**1.2**
51	**Dist. of Col.**	1.1	0.3%	0.0	0.0	0.0	0.0%	0.2	0.3	0.6	0.0	**1.1**
	TOTAL JOBS	7,676.2	7.2%	2,027.8	1,316.4	3,344.2	19.8%	570.7	653.1	1,383.5	1,724.7	**4,332.0**

Note: Numbers may not add to totals due to rounding.

Definitions: Direct export-related jobs refer to employment generated in manufacturing establishments producing final goods for export. Indirect jobs are those jobs generated upstream or downstream from the final production point as export activity triggers ripple effects in supporting sectors throughout the economy.

Source: Manufacturing & Construction Division, Bureau of the Census.

Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.

JOBS SUPPORTED BY THE EXPORT OF MANUFACTURED GOODS

States Ranked by the Percent of Total Private-Sector Jobs Tied to Manufactured Exports)

(Thousands of Jobs; 1997 Data)

		Jobs Tied to Manu. Exports		Mfg. Jobs Tied to Manufactured Exports				Non-Manufacturing Jobs Tied to Manufactured Exports				
Rank	State	Total Number of Jobs	As % of Total Private Sector Jobs	Direct Export-Related	Indirect Export-Related	Total Export-Related	Export Empl. as % of Total Mfg. Empl.	Business Services	Transpor-tation Services	Wholesale & Retail Trade	Other Non-Mfg. Sectors	Total Non-Mfg. Sectors
1	New Mexico	97.1	17.3%	6.5	5.4	11.9	30.0%	11.5	9.9	15.9	47.9	85.2
2	Idaho	74.9	16.5%	9.6	7.9	17.5	26.4%	5.4	5.5	22.0	24.5	57.4
3	Washington	254.6	11.7%	90.6	38.8	129.4	39.4%	15.1	18.3	34.7	57.1	125.2
4	New Hampshire	52.9	10.5%	14.3	11.1	25.4	25.7%	3.8	3.1	8.5	12.1	27.5
5	Kentucky	145.4	9.9%	27.2	31.1	58.3	20.2%	7.4	13.7	26.4	39.6	87.1
6	California	1,147.9	9.8%	288.8	210.1	498.9	27.6%	85.7	79.6	217.6	266.1	649.0
7	Indiana	240.7	9.5%	66.9	57.4	124.3	19.9%	12.1	20.9	35.2	48.2	116.4
8	Michigan	372.9	9.5%	100.2	90.8	191.0	22.9%	37.8	26.7	54.9	62.5	181.9
9	Ohio	451.5	9.5%	116.3	107.4	223.7	22.7%	34.2	37.8	72.6	83.2	227.8
10	Oregon	128.8	9.5%	29.4	16.6	46.0	21.6%	10.1	10.4	24.5	37.8	82.8
11	South Carolina	136.0	9.3%	40.4	28.4	68.8	19.9%	7.8	12.0	17.1	30.3	67.2
12	Vermont	22.2	9.0%	5.6	2.5	8.1	19.1%	1.4	1.7	3.6	7.4	14.1
13	North Carolina	285.6	8.9%	77.2	55.7	132.9	17.2%	19.9	23.2	49.1	60.5	152.7
14	Iowa	107.4	8.4%	27.8	15.9	43.7	18.5%	4.7	9.1	18.9	31.0	63.7
15	Texas	611.6	8.1%	116.3	79.9	196.2	20.4%	49.4	62.0	114.1	189.9	415.4
16	Wisconsin	191.9	8.1%	56.7	36.2	92.9	16.5%	11.7	13.5	29.0	44.8	99.0
17	Connecticut	105.6	7.5%	40.4	22.8	63.2	25.0%	9.3	5.5	14.5	13.1	42.4
18	Alabama	115.0	7.3%	32.1	20.2	52.3	14.8%	5.9	11.0	20.6	25.2	62.7
19	Utah	61.4	7.2%	11.5	8.8	20.3	17.0%	3.9	5.7	14.5	17.0	41.1
20	Illinois	360.4	7.1%	93.7	70.8	164.5	18.5%	28.5	33.2	65.2	69.0	195.9
21	Missouri	167.1	7.1%	44.2	31.5	75.7	20.4%	10.8	14.9	29.1	36.6	91.4
22	Nebraska	56.0	7.1%	11.5	4.5	16.0	15.0%	2.4	4.0	9.7	23.9	40.0
23	Minnesota	156.1	7.0%	40.2	26.0	66.2	17.3%	15.6	11.7	28.9	33.7	89.9
24	South Dakota	23.0	7.0%	5.8	3.1	8.9	19.1%	1.0	1.4	6.2	5.5	14.1
25	Massachusetts	189.9	6.9%	65.8	37.8	103.6	24.8%	14.2	11.6	30.5	30.0	86.3
26	Mississippi	63.8	6.9%	16.8	7.8	24.6	10.8%	2.2	6.3	9.2	21.5	39.2
27	Colorado	117.4	6.8%	22.4	13.7	36.1	20.9%	9.5	9.8	25.0	37.0	81.3
28	Tennessee	156.2	6.8%	46.0	33.0	79.0	16.3%	7.8	13.8	27.7	27.9	77.2
29	Arizona	111.3	6.4%	26.5	14.4	40.9	21.1%	9.4	11.0	18.9	31.1	70.4

JOBS SUPPORTED BY THE EXPORT OF MANUFACTURED GOODS

States Ranked by the Percent of Total Private-Sector Jobs Tied to Manufactured Exports)

(Thousands of Jobs; 1997 Data)

		Jobs Tied to Manu. Exports		Mfg. Jobs Tied to Manufactured Exports				Non-Manufacturing Jobs Tied to Manufactured Exports				
Rank	State	Total Number of Jobs	As % of Total Private Sector Jobs	Direct Export-Related	Indirect Export-Related	Total Export-Related	Export Empl. as % of Total Mfg. Empl.	Business Services	Transpor-tation Services	Wholesale & Retail Trade	Other Non-Mfg. Sectors	Total Non-Mfg. Sectors
30	Arkansas	61.8	**6.3%**	17.9	8.9	26.8	11.6%	2.5	6.3	9.6	16.6	35.0
31	Kansas	68.1	**6.2%**	18.6	6.5	25.1	13.0%	2.8	4.6	11.1	24.5	43.0
32	Georgia	185.5	**5.9%**	46.5	26.2	72.7	13.6%	16.8	18.4	37.2	40.4	112.8
33	Pennsylvania	270.4	**5.6%**	84.1	52.8	136.9	16.6%	23.3	25.1	45.2	39.9	133.5
34	Rhode Island	21.8	**5.5%**	9.8	4.1	13.9	18.4%	1.2	1.0	3.2	2.5	7.9
35	Oklahoma	63.9	**5.4%**	21.3	8.8	30.1	18.3%	2.7	5.1	12.3	13.7	33.8
36	Louisiana	81.8	**5.3%**	15.3	7.5	22.8	13.8%	4.1	12.1	16.5	26.3	59.0
37	Virginia	142.0	**5.2%**	40.3	18.4	58.7	15.8%	8.6	13.1	22.3	39.3	83.3
38	Maine	23.8	**5.0%**	8.8	3.3	12.1	14.7%	0.9	2.0	4.0	4.8	11.7
39	New Jersey	152.7	**4.8%**	38.7	20.7	59.4	14.5%	23.2	15.2	37.5	17.4	93.3
40	New York	309.6	**4.5%**	110.1	45.1	155.2	19.7%	24.5	26.7	64.4	38.8	154.4
41	Delaware	13.2	**3.9%**	3.4	1.0	4.4	10.7%	4.2	1.0	2.1	1.5	8.8
42	West Virginia	20.7	**3.5%**	6.4	2.5	8.9	12.2%	0.7	2.5	4.3	4.3	11.8
43	Maryland	58.9	**3.1%**	18.7	6.0	24.7	15.1%	5.2	5.8	15.0	8.2	34.2
44	Florida	160.8	**2.8%**	47.2	13.9	61.1	14.1%	10.3	19.7	42.2	27.5	99.7
45	North Dakota	6.8	**2.4%**	1.8	0.3	2.1	9.5%	0.1	0.8	2.5	1.3	4.7
46	Alaska	4.3	**2.2%**	1.1	0.1	1.2	11.1%	0.1	1.3	0.9	0.8	3.1
47	Montana	5.9	**1.8%**	1.8	0.2	2.0	10.2%	0.1	0.8	2.0	1.0	3.9
48	Hawaii	6.0	**1.4%**	1.1	0.1	1.2	7.9%	0.2	1.9	2.2	0.5	4.8
49	Nevada	11.0	**1.4%**	3.9	0.4	4.3	11.4%	0.4	1.8	3.6	0.9	6.7
50	Wyoming	1.5	**0.8%**	0.3	0.0	0.3	3.6%	0.1	0.3	0.7	0.1	1.2
51	Dist. of Col.	1.1	**0.3%**	0.0	0.0	0.0	0.0%	0.2	0.3	0.6	0.0	1.1
	TOTAL JOBS	7,676.2	**7.2%**	2,027.8	1,316.4	3,344.2	19.8%	570.7	653.1	1,383.5	1,724.7	4,332.0

Note: Numbers may not add to totals due to rounding.

Definitions: Direct export-related jobs refer to employment generated in manufacturing establishments producing final goods for export. Indirect jobs are those jobs generated upstream or downstream from the final production point as export activity triggers ripple effects in supporting sectors throughout the economy.

Source: Manufacturing & Construction Division, Bureau of the Census.

Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.

JOBS SUPPORTED BY THE EXPORT OF MANUFACTURED GOODS

States Ranked by Percent of Manufacturing Jobs Tied to Manufactured Exports

(Thousands of Jobs; 1997 Data)

		Jobs Tied to Manu. Exports		Mfg. Jobs Tied to Manufactured Exports				Non-Manufacturing Jobs Tied to Manufactured Exports				
Rank	State	Total Number of Jobs	As % of Total Private Sector Jobs	Direct Export-Related	Indirect Export-Related	Total Export-Related	Export Empl. as % of Total Mfg. Empl.	Business Services	Transportation Services	Wholesale & Retail Trade	Other Non-Mfg. Sectors	Total Non-Mfg. Sectors
1	Washington	254.6	11.7%	90.6	38.8	129.4	**39.4%**	15.1	18.3	34.7	57.1	125.2
2	New Mexico	97.1	17.3%	6.5	5.4	11.9	**30.0%**	11.5	9.9	15.9	47.9	85.2
3	California	1,147.9	9.8%	288.8	210.1	498.9	**27.6%**	85.7	79.6	217.6	266.1	649.0
4	Idaho	74.9	16.5%	9.6	7.9	17.5	**26.4%**	5.4	5.5	22.0	24.5	57.4
5	New Hampshire	52.9	10.5%	14.3	11.1	25.4	**25.7%**	3.8	3.1	8.5	12.1	27.5
6	Connecticut	105.6	7.5%	40.4	22.8	63.2	**25.0%**	9.3	5.5	14.5	13.1	42.4
7	Massachusetts	189.9	6.9%	65.8	37.8	103.6	**24.8%**	14.2	11.6	30.5	30.0	86.3
8	Michigan	372.9	9.5%	100.2	90.8	191.0	**22.9%**	37.8	26.7	54.9	62.5	181.9
9	Ohio	451.5	9.5%	116.3	107.4	223.7	**22.7%**	34.2	37.8	72.6	83.2	227.8
10	Oregon	128.8	9.5%	29.4	16.6	46.0	**21.6%**	10.1	10.4	24.5	37.8	82.8
11	Arizona	111.3	6.4%	26.5	14.4	40.9	**21.1%**	9.4	11.0	18.9	31.1	70.4
12	Colorado	117.4	6.8%	22.4	13.7	36.1	**20.9%**	9.5	9.8	25.0	37.0	81.3
13	Texas	611.6	8.1%	116.3	79.9	196.2	**20.4%**	49.4	62.0	114.1	189.9	415.4
14	Missouri	167.1	7.1%	44.2	31.5	75.7	**20.4%**	10.8	14.9	29.1	36.6	91.4
15	Kentucky	145.4	9.9%	27.2	31.1	58.3	**20.2%**	7.4	13.7	26.4	39.6	87.1
16	South Carolina	136.0	9.3%	40.4	28.4	68.8	**19.9%**	7.8	12.0	17.1	30.3	67.2
17	Indiana	240.7	9.5%	66.9	57.4	124.3	**19.9%**	12.1	20.9	35.2	48.2	116.4
18	New York	309.6	4.5%	110.1	45.1	155.2	**19.7%**	24.5	26.7	64.4	38.8	154.4
19	South Dakota	23.0	7.0%	5.8	3.1	8.9	**19.1%**	1.0	1.4	6.2	5.5	14.1
20	Vermont	22.2	9.0%	5.6	2.5	8.1	**19.1%**	1.4	1.7	3.6	7.4	14.1
21	Illinois	360.4	7.1%	93.7	70.8	164.5	**18.5%**	28.5	33.2	65.2	69.0	195.9
22	Iowa	107.4	8.4%	27.8	15.9	43.7	**18.5%**	4.7	9.1	18.9	31.0	63.7
23	Rhode Island	21.8	5.5%	9.8	4.1	13.9	**18.4%**	1.2	1.0	3.2	2.5	7.9
24	Oklahoma	63.9	5.4%	21.3	8.8	30.1	**18.3%**	2.7	5.1	12.3	13.7	33.8
25	Minnesota	156.1	7.0%	40.2	26.0	66.2	**17.3%**	15.6	11.7	28.9	33.7	89.9
26	North Carolina	285.6	8.9%	77.2	55.7	132.9	**17.2%**	19.9	23.2	49.1	60.5	152.7
27	Utah	61.4	7.2%	11.5	8.8	20.3	**17.0%**	3.9	5.7	14.5	17.0	41.1
28	Pennsylvania	270.4	5.6%	84.1	52.8	136.9	**16.6%**	23.3	25.1	45.2	39.9	133.5
29	Wisconsin	191.9	8.1%	56.7	36.2	92.9	**16.5%**	11.7	13.5	29.0	44.8	99.0

JOBS SUPPORTED BY THE EXPORT OF MANUFACTURED GOODS

States Ranked by Percent of Manufacturing Jobs Tied to Manufactured Exports

(Thousands of Jobs; 1997 Data)

		Jobs Tied to Manu. Exports		Mfg. Jobs Tied to Manufactured Exports				Non-Manufacturing Jobs Tied to Manufactured Exports				
Rank	State	Total Number of Jobs	As % of Total Private Sector Jobs	Direct Export-Related	Indirect Export-Related	Total Export-Related	Export Empl. as % of Total Mfg. Empl.	Business Services	Transpor-tation Services	Wholesale & Retail Trade	Other Non-Mfg. Sectors	Total Non-Mfg. Sectors
30	Tennessee	156.2	6.8%	46.0	33.0	79.0	**16.3%**	7.8	13.8	27.7	27.9	77.2
31	Virginia	142.0	5.2%	40.3	18.4	58.7	**15.8%**	8.6	13.1	22.3	39.3	83.3
32	Maryland	58.9	3.1%	18.7	6.0	24.7	**15.1%**	5.2	5.8	15.0	8.2	34.2
33	Nebraska	56.0	7.1%	11.5	4.5	16.0	**15.0%**	2.4	4.0	9.7	23.9	40.0
34	Alabama	115.0	7.3%	32.1	20.2	52.3	**14.8%**	5.9	11.0	20.6	25.2	62.7
35	Maine	23.8	5.0%	8.8	3.3	12.1	**14.7%**	0.9	2.0	4.0	4.8	11.7
36	New Jersey	152.7	4.8%	38.7	20.7	59.4	**14.5%**	23.2	15.2	37.5	17.4	93.3
37	Florida	160.8	2.8%	47.2	13.9	61.1	**14.1%**	10.3	19.7	42.2	27.5	99.7
38	Louisiana	81.8	5.3%	15.3	7.5	22.8	**13.8%**	4.1	12.1	16.5	26.3	59.0
39	Georgia	185.5	5.9%	46.5	26.2	72.7	**13.6%**	16.8	18.4	37.2	40.4	112.8
40	Kansas	68.1	6.2%	18.6	6.5	25.1	**13.0%**	2.8	4.6	11.1	24.5	43.0
41	West Virginia	20.7	3.5%	6.4	2.5	8.9	**12.2%**	0.7	2.5	4.3	4.3	11.8
42	Arkansas	61.8	6.3%	17.9	8.9	26.8	**11.6%**	2.5	6.3	9.6	16.6	35.0
43	Nevada	11.0	1.4%	3.9	0.4	4.3	**11.4%**	0.4	1.8	3.6	0.9	6.7
44	Alaska	4.3	2.2%	1.1	0.1	1.2	**11.1%**	0.1	1.3	0.9	0.8	3.1
45	Mississippi	63.8	6.9%	16.8	7.8	24.6	**10.8%**	2.2	6.3	9.2	21.5	39.2
46	Delaware	13.2	3.9%	3.4	1.0	4.4	**10.7%**	4.2	1.0	2.1	1.5	8.8
47	Montana	5.9	1.8%	1.8	0.2	2.0	**10.2%**	0.1	0.8	2.0	1.0	3.9
48	North Dakota	6.8	2.4%	1.8	0.3	2.1	**9.5%**	0.1	0.8	2.5	1.3	4.7
49	Hawaii	6.0	1.4%	1.1	0.1	1.2	**7.9%**	0.2	1.9	2.2	0.5	4.8
50	Wyoming	1.5	0.8%	0.3	0.0	0.3	**3.6%**	0.1	0.3	0.7	0.1	1.2
51	Dist. of Col.	1.1	0.3%	0.0	0.0	0.0	**0.0%**	0.2	0.3	0.6	0.0	1.1
	TOTAL JOBS	7,676.2	7.2%	2,027.8	1,316.4	3,344.2	**19.8%**	570.7	653.1	1,383.5	1,724.7	4,332.0

Note: Numbers may not add to totals due to rounding.

Definitions: Direct export-related jobs refer to employment generated in manufacturing establishments producing final goods for export. Indirect jobs are those jobs generated upstream or downstream from the final production point as export activity triggers ripple effects in supporting sectors throughout the economy.

Source: Manufacturing & Construction Division, Bureau of the Census.

Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.

MANUFACTURING JOBS RELATED TO MANUFACTURES EXPORTS BY INDUSTRY GROUP

(Thousands of Jobs; 1997 Data. Industries Arrayed by NAICS Industry Code.)

NAICS Industry Code	Industry Title	All Manufacturing Jobs	Jobs From Direct Mfg. Exports	Jobs From Indirect Mfg. Exports	Total Jobs From Mfg. Exports	Export-Related Jobs as % of Mfg. Employ.
	Total, All Manufacturing Industries	16,887.9	2,027.8	1,316.3	3,343.9	19.8
311	**Food**	1,471.1	67.3	22.7	90.0	6.1
312	**Beverage and Tobacco Products**	176.0	7.3	1.1	8.3	4.7
313	**Textile Mills**	393.9	35.8	46.2	82.0	20.8
314	**Textile Products**	236.2	15.0	6.4	21.4	9.1
315	**Apparel**	719.3	77.5	13.2	90.6	12.6
316	**Leather and Allied Products**	84.8	13.7	2.7	16.4	19.3
321	**Wood Products**	574.4	24.9	24.2	49.2	8.6
322	**Paper**	576.9	43.7	48.9	92.6	16.1
323	**Printing & Related Support Activities**	838.2	12.8	48.3	61.1	7.3
324	**Petroleum and Coal Products**	107.9	3.9	5.3	9.2	8.5
325	**Chemicals**	884.3	120.4	100.5	220.9	25.0
326	**Plastics and Rubber Products**	1,030.0	73.3	103.8	177.1	17.2
327	**Nonmetallic Mineral Products**	504.4	32.5	28.4	60.9	12.1
331	**Primary Metals**	611.7	51.9	162.2	214.1	35.0
332	**Fabricated Metal Products**	1,774.9	109.4	282.4	391.8	22.1
333	**Machinery**	1,421.8	324.7	71.8	396.5	27.9
334	**Computers and Electronic Products**	1,698.5	428.1	174.6	602.7	35.5
335	**Electrical Eqp., Appliances, & Parts**	594.9	97.8	55.9	153.7	25.8
336	**Transportation Equipment**	1,848.6	373.8	95.7	469.5	25.4
337	**Furniture and Related Products**	604.8	20.8	6.2	27.0	4.5
339	**Miscellaneous Manufactured Prod.**	735.3	93.2	15.8	109.0	14.8

Source: Manufacturing & Construction Division, Bureau of the Census.
Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.

MANUFACTURING JOBS RELATED TO MANUFACTURES EXPORTS BY INDUSTRY GROUP

(Thousands of Jobs; 1997 Data. Industries Ranked by Total Number of Export-Related Jobs.)

Rank	NAICS Industry Code	Industry Title	All Manufacturing Jobs	Jobs From Direct Mfg. Exports	Jobs From Indirect Mfg. Exports	Total Jobs From Mfg. Exports	Export-Related Jobs as % of Mfg. Employ.
		Total, All Manufacturing Industries	16,887.9	2,027.8	1,316.3	**3,343.9**	19.8
1	**334**	**Computers and Electronic Products**	1,698.5	428.1	174.6	**602.7**	35.5
2	**336**	**Transportation Equipment**	1,848.6	373.8	95.7	**469.5**	25.4
3	**333**	**Machinery**	1,421.8	324.7	71.8	**396.5**	27.9
4	**332**	**Fabricated Metal Products**	1,774.9	109.4	282.4	**391.8**	22.1
5	**325**	**Chemicals**	884.3	120.4	100.5	**220.9**	25.0
6	**331**	**Primary Metals**	611.7	51.9	162.2	**214.1**	35.0
7	**326**	**Plastics and Rubber Products**	1,030.0	73.3	103.8	**177.1**	17.2
8	**335**	**Electrical Eqp., Appliances, & Parts**	594.9	97.8	55.9	**153.7**	25.8
9	**339**	**Miscellaneous Manufactured Prod.**	735.3	93.2	15.8	**109.0**	14.8
10	**322**	**Paper**	576.9	43.7	48.9	**92.6**	16.1
11	**315**	**Apparel**	719.3	77.5	13.2	**90.6**	12.6
12	**311**	**Food**	1,471.1	67.3	22.7	**90.0**	6.1
13	**313**	**Textile Mills**	393.9	35.8	46.2	**82.0**	20.8
14	**323**	**Printing & Related Support Activities**	838.2	12.8	48.3	**61.1**	7.3
15	**327**	**Nonmetallic Mineral Products**	504.4	32.5	28.4	**60.9**	12.1
16	**321**	**Wood Products**	574.4	24.9	24.2	**49.2**	8.6
17	**337**	**Furniture and Related Products**	604.8	20.8	6.2	**27.0**	4.5
18	**314**	**Textile Products**	236.2	15.0	6.4	**21.4**	9.1
19	**316**	**Leather and Allied Products**	84.8	13.7	2.7	**16.4**	19.3
20	**324**	**Petroleum and Coal Products**	107.9	3.9	5.3	**9.2**	8.5
21	**312**	**Beverage and Tobacco Products**	176.0	7.3	1.1	**8.3**	4.7

Source: Manufacturing & Construction Division, Bureau of the Census.
Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.

MANUFACTURING JOBS RELATED TO MANUFACTURES EXPORTS BY INDUSTRY GROUP

(Thousands of Jobs; 1997 Data. Industries Ranked by Total Percent of Export-Related Jobs.)

Rank	NAICS Industry Code	Industry Title	All Manufacturing Jobs	Jobs From Direct Mfg. Exports	Jobs From Indirect Mfg. Exports	Total Jobs From Mfg. Exports	Export-Related Jobs as % of Mfg. Employ.
		Total, All Manufacturing Industries	16,887.9	2,027.8	1,316.3	3,343.9	**19.8**
1	**334**	**Computers and Electronic Products**	1,698.5	428.1	174.6	602.7	**35.5**
2	**331**	**Primary Metals**	611.7	51.9	162.2	214.1	**35.0**
3	**333**	**Machinery**	1,421.8	324.7	71.8	396.5	**27.9**
4	**335**	**Electrical Eqp., Appliances, & Parts**	594.9	97.8	55.9	153.7	**25.8**
5	**336**	**Transportation Equipment**	1,848.6	373.8	95.7	469.5	**25.4**
6	**325**	**Chemicals**	884.3	120.4	100.5	220.9	**25.0**
7	**332**	**Fabricated Metal Products**	1,774.9	109.4	282.4	391.8	**22.1**
8	**313**	**Textile Mills**	393.9	35.8	46.2	82.0	**20.8**
9	**316**	**Leather and Allied Products**	84.8	13.7	2.7	16.4	**19.3**
10	**326**	**Plastics and Rubber Products**	1,030.0	73.3	103.8	177.1	**17.2**
11	**322**	**Paper**	576.9	43.7	48.9	92.6	**16.1**
12	**339**	**Miscellaneous Manufactured Prod.**	735.3	93.2	15.8	109.0	**14.8**
13	**315**	**Apparel**	719.3	77.5	13.2	90.6	**12.6**
14	**327**	**Nonmetallic Mineral Products**	504.4	32.5	28.4	60.9	**12.1**
15	**314**	**Textile Products**	236.2	15.0	6.4	21.4	**9.1**
16	**321**	**Wood Products**	574.4	24.9	24.2	49.2	**8.6**
17	**324**	**Petroleum and Coal Products**	107.9	3.9	5.3	9.2	**8.5**
18	**323**	**Printing & Related Support Activities**	838.2	12.8	48.3	61.1	**7.3**
19	**311**	**Food**	1,471.1	67.3	22.7	90.0	**6.1**
20	**312**	**Beverage and Tobacco Products**	176.0	7.3	1.1	8.3	**4.7**
21	**337**	**Furniture and Related Products**	604.8	20.8	6.2	27.0	**4.5**

Source: Manufacturing & Construction Division, Bureau of the Census.
Prepared by: Office of Trade & Economic Analysis, Trade Development, ITA, U.S. Department of Commerce.

APPENDIX

DETAILED DESCRIPTION OF CENSUS METHODS AND ESTIMATING PROCEDURES

Prepared by the Manufacturing and Construction Division
U.S. Census Bureau

The sections that follow describe the methodology used to develop estimates of the employment effects of manufactured exports at the national level and by state.

Derivation of Direct Export-Related Employment

Manufacturers reporting in the Census of Manufacturers were requested to:

> *Report the value of products shipped for exports. Include direct exports and products shipped to exporters or other wholesalers for export. Also include the value of products sold to the U.S. Government to be shipped to foreign governments. Do not include products shipped for further manufacture, assembly, or fabrication in the United States.*

Such directly reported exports understate the true value of all exports because many respondents do not know the final destination of the products produced in their plants. This includes cases where the export transaction is actually arranged by an independent exporting firm (e.g., a wholesaler) or where shipments of the products are made from company-operated warehouses or other distribution points which do not allocate or report the export sales back to individual producing establishments.

Estimated value of exports. In order to provide a more accurate measure of the overall importance of exports industrially and geographically, directly reported values from the Census of Manufacturers have been adjusted to include estimates for the unreported exports, including exports of manufactured products by wholesalers, retailers, etc.

The values for total U.S. exports of manufactured products are from official export data compiled by the Foreign Trade Division of the Bureau of the Census (Census) based on Shippers' Export Declarations. Re-exports are excluded from the figures because only domestically manufactured exports are relevant to estimation of export-related employment.

Merchandise exports were collected and compiled in accordance with the commodity classifications in *Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported From the United States*. These classifications were rearranged into an export product nomenclature related to the origin of production called the North American Industry Classification System (NAICS). Export data for Puerto Rico and the U.S. Virgin Islands were subtracted from the file. This was done because these areas are not included in the Census of Manufacturers; hence, their removal from the

data was necessary to accurately estimate the effects of exports on the domestic economy. By the same token, exports from the United States to these territories were added to the merchandise export data. These adjustments were performed by the Foreign Trade Division.

Merchandise export data are collected on an individual commodity transaction basis, while export data in the Census of Manufacturers are collected on the basis of all commodities exported by the industry. To put the two sets of data on the same basis, the merchandise export data from the Foreign Trade Division were converted to an industry basis using the 1997 Census of Manufacturers data on the distribution of product shipments by industry.

Export data are collected at the port of export on a *free alongside ship (f.a.s.)* basis, and thus include freight and wholesale margins. To make the export data comparable with data collected in the Census of Manufacturers, the margins were subtracted to derive a *freight on board (f.o.b.) plant* value. Six-digit input-output (I/O) commodity margin rates from the 1992 benchmark I/O tables were converted to industry margin rates and then applied to the merchandise exports on an industry basis to derive the f.o.b. plant value of exports by industry.

Next, differences between the national estimates of export shipments obtained from the Foreign Trade Division's data and national totals of export shipments as reported on the Census of Manufacturers were allocated to the individual states. At the state level, the differences were added to export values reported on the Census of Manufacturers to arrive at state-by-state estimates of the total f.o.b. value of exports by manufacturing establishments. Details of the allocation and estimation methods are provided below.

Allocation of unreported value of exports. Differences between the directly reported exports and the national export estimates f.o.b. plant were allocated to states on a four-digit NAICS level. The estimating procedure assumes that export shipments not reported by manufacturing establishments are directly related to the geographic distribution of the total value of shipments of the industry and export shipments as reported for each state on the Census of Manufacturers. Specifically, the following formula was used to allocate the national difference for each industry to each state.

$$(N-S)\left[\left(\frac{S}{N}\right)\left(\frac{E_s}{S}\right)+\left(1-\frac{S}{N}\right)\left(\frac{TVS_s}{TVS}\right)\right] \quad \text{where,}$$

N is the national export estimate for this industry,
S is the national total of directly reported exports for this industry,
E_s is the value of directly reported exports for this industry in this state,
TVS is the national total value of shipments for this industry, and
TVS_s is the total value of shipments for this industry in this state.

This formula results in the proportion of the total value of industry shipments accounted for by this state being weighted more heavily when the difference between directly reported exports and the national export estimate increases. When the difference between directly reported and estimated exports decreases (or vanishes), the proportion of directly reported exports accounted for by the state is weighted more heavily. There are no measures available regarding the possible range of error associated with this estimating technique.

Estimating direct export-related employment. Employment related to direct exports is not collected in the Census of Manufacturers. However, the total value of shipments, as well as total employment, is collected for each establishment. Using these data from the 1997 Census, employment related to direct exports was calculated by multiplying the total employment of each industry in each state by the ratio of the estimated total f.o.b. value of exports for that industry in that state to total shipments for that industry in that state. As with the estimates of exports, there are no measures available regarding the possible range of error associated with this estimating technique.

Indirect Requirements Supporting Manufactured Exports

The previous section described how estimates of the f.o.b. plant value of exported manufactured goods were made, were converted to numbers of employees, and how both the value and employment were allocated by state. This section describes how the indirect inputs to these exports were estimated and allocated by state.

Definition of indirect requirements. Indirect requirements refer to all of the inputs purchased by the manufacturing establishments to produce the product being exported and the requirements of these suppliers, etc. As an example, the export value of Chemicals in 1997 amounted to $57.4 billion as goods left the manufacturing plant. To produce the $57.4 billion of Chemicals, it was necessary for these plants to purchase Petroleum and Coal products from other plants, various other materials, containers for shipping, electrical energy from utility firms, oil and lubricants for maintenance, a variety of business and professional services, etc.

Producers of the various inputs and services which were sold to Chemical producers also had to purchase inputs and various services from farms, mines, factories, utilities, transportation firms, etc. These secondary suppliers, in turn, had to purchase inputs from their suppliers. At the aggregate level, this lengthy chain of transactions leading to the production of Chemicals is referred to as the indirect requirements for chemicals (or for any other final products). Total indirect requirements are derived by applying regional I/O domestic total requirements tables developed by the Bureau of Economic Analysis (BEA) to the products for which a solution is sought.

Estimating domestic indirect requirements for manufactured exports. At the state level, the domestic indirect requirements for manufactured exports were estimated by using the f.o.b. plant values of exports which were derived above, together with tables of regional domestic total requirements multipliers supplied by the Regional Economic Analysis Division of the BEA. Indirect requirements at the national level were calculated using BEA's national table. These tables were derived from the 1992 I/O tables and exclude requirements from outside the region covered by the table. Hence, the national table excludes requirements from foreign sources and each state table excludes requirements from sources outside the state.

Estimates of domestic output required for the value of manufactured exports were derived using the following seven-step procedure:

1. Exports by detailed NAICS manufacturing industry were converted to an SIC basis.

2. The SIC-based industry estimates were deflated to 1992 prices using industry price indexes supplied by the Industry Economics Division of the BEA.

3. The deflated exports were multiplied by the regional total requirements multipliers to obtain domestic (or state) output required (in 1992 prices).

4. Regional output was reflated to current-year prices using the industry price indexes.

5. Indirect domestic output required was derived as regional output less exports.

6. The detailed SIC-based indirect requirements were converted to NAICS manufacturing industry requirements.

7. The difference between the sum of state indirect manufacturing requirements and the national manufacturing requirements was allocated to states.

Indirect requirements of manufacturing industries by state. State requirements were calculated in two phases. In the first phase, intra-state manufactured requirements were calculated for each state using state indirect requirements tables. These tables were derived from the 1992 I/O tables and exclude requirements from outside each state. The estimate of intra-state output required for the value of manufactured exports was derived using same first six steps of the seven-step procedure used for the national estimates. The intra-state requirement from an industry is the value of shipments from this industry used as inputs to this and other industries during the production of exports or inputs to the production of exports.

In the second phase, the difference between the sum of the state requirements and the national requirements from each manufacturing industry was allocated to states. This difference is the inter-state requirement from each industry. The inter-state requirement from each industry is the value of shipments from this industry that are shipped across state lines for use by this and other industries in the production of exports or inputs to the production of exports.

The national total inter-state requirement from each manufacturing industry was allocated to states on the basis of the distribution of total shipments by that industry across states. For example, the 1997 Census of Manufacturers indicates that 3 percent of the value of all shipments of the Fabric Mills industry (NAICS 3132) in the U.S. in 1997 occurred in New York State ($1.0 billion out of a U.S. total of $30.0 billion). Therefore, 3 percent of the national inter-state requirement from the Fabric Mills industry was allocated to New York State.

There were a few cases where this allocation procedure resulted in the sum of estimated exports from an industry and indirect requirements from that industry in a state exceeding the total value of shipments from that industry in that state. In these few cases, the inter-state requirement from that industry allocated to that state was reduced and the amount of the reduction was allocated to other states on the basis of their shares of total shipments from the remaining states. In all these cases, when the relevant four-digit NAICS industries were summed to the three-digit level, total shipments always exceeded the combined export and indirect requirements values. This occurred because of the influence of the vast majority of four-digit categories where total shipments were greater than the sum of exports and indirect requirements. Consequently, for all three-digit NAICS industries in the 50 states and the District of Columbia for which information was provided, total shipments exceeded the combined export and indirect requirements values.

When the total value of indirect requirements from each manufacturing industry in each state was determined, employment associated with those values was calculated. The ratio of total employment to total value of shipments for each manufacturing industry in each state was calculated using figures from the 1997 Census of Manufacturers. Next, the value of total indirect requirements from each industry in each state was multiplied by the ratio of employment to value of shipments for that industry in that state to obtain an estimate of the total employment associated with providing those indirect requirements. Total indirect manufacturing employment in each state was obtained by summing the employment in each manufacturing industry.

Employment associated with indirect requirements of non-manufacturing industries. The employment in non-manufacturing industries associated with providing indirect requirements for the production of manufactured exports or of inputs used to produce manufactured exports was estimated by using regional total requirements employment multipliers supplied by BEA and the direct export estimates discussed above. These employment multipliers for a given industry in a region show the number of full- and part-time jobs that regional industries provide, both directly and indirectly, in order for the given industry to deliver $1 million of output to final demand. Estimates of employment associated with indirect requirements were obtained in three steps.

1. Exports by detailed NAICS manufacturing industry were converted to an SIC basis.

2. The SIC-based industry estimates were deflated to 1992 prices using industry price indexes supplied by the Industry Economics Division of the BEA.

3. The deflated exports were multiplied by the regional employment requirements multipliers to obtain export-related employment in non-manufacturing industries providing inputs to either the production of final goods for export, or the production of other inputs necessary for the manufacture of exports.

As was done for indirect requirements of manufacturing industries, these calculations were made at the national level with national exports and national multipliers, and for each state with exports from that state and multipliers for that state. The use of both national-level and state-level multipliers resulted in a difference between the sum of the state employment for each industry and national employment for that industry. Utilizing national export-related employment as the control total for each industry, this difference was allocated proportionally across the states using the initial state export employment data for each industry. On an unadjusted basis, if a state accounted for 10 percent of the export employment, it received 10 percent of the adjustment.

Estimating export-related employment for auxiliaries. Under the NAICS, establishments at manufacturers' auxiliaries are classified in non-manufacturing industries. Under the SIC these establishments are classified in manufacturing industries. Since export-related employment in manufacturing industries was calculated using employment-to-shipments ratios for NAICS manufacturing industries, employment at the auxiliary establishments is not included in those results. By the same token, since indirect-requirements-related employment in non-manufacturing industries was calculated using employment multipliers for SIC industries, employment at these establishments is not included in those results (this anomaly will be eliminated when BEA's regional multipliers are revised to NAICS-based industries).

As a result of the preceding, it was necessary to calculate indirect-requirement-related employment at manufacturers' auxiliaries separately and add that result to the estimates of Business Services employment (these auxiliaries are included in Business Services under NAICS). Indirect-requirements-related employment at manufacturers' auxiliaries was estimated by first calculating the ratio of the estimated national value of export shipments to the total value of shipments from manufacturers in 1997. The employment at each establishment identified as a manufacturer's auxiliary in 1997 was then multiplied by this ratio. Resulting estimates were summed within each state, and were then added to the previously calculated estimates of each state's Business Services employment related to providing indirect requirements to export manufacturing.

Plant-to-port indirect requirements employment. The port value of manufactured exports in 1997 was approximately $571 billion, and it was estimated that the f.o.b. plant value of these goods was $503 billion. The difference of $68 billion represents transportation costs of moving these goods (mainly to seaports but also to airports and rail or truck border crossing points) and the margin, or markup of exporters, which is a component of wholesale trade. Using a long-established 80 percent/20 percent guideline, $54 billion of the $68 billion difference was allocated to wholesale trade and the remaining $14 billion was allocated to transportation.

Data from BEA on Gross Domestic Product by Industry were used to calculate ratios of Full- and Part-Time Employees (employment) to Gross Domestic Product by Industry for Transportation and for Wholesale Trade in 1997. The amount allocated to each industry was multiplied by that industry's ratio to obtain an estimate of employment related to plant-to-port indirect requirements of that industry. These national totals were allocated to states using the distribution of 1997 employment across states for Transportation and for Wholesale Trade in the County Business Patterns data. The estimate of Transportation employment was added to the previously calculated value of indirect-requirements-related employment of "Transportation, communications, and utilities." The estimate of Wholesale Trade employment was added to the previously calculated value of indirect-requirements-related employment of "Trade."

Questions regarding the above methodology should be e-mailed directly to John.H.Gates@census.gov .